Chapter 4: Five-Year Water Resource Development Work Program

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INTRODUCTION

The Florida Legislature requires and authorizes the South Florida Water Management District (SFWMD or District) to develop and implement plans to meet the future water demands of South Florida. In partial fulfillment of this requirement, the SFWMD has prepared regional water supply plans. Water supply planning and development activities were first required of the state's water management districts following adoption of the Florida Water Resources Act of 1972 (Chapter 373, Florida Statutes, [F.S.]). During the 1997 legislative session, significant amendments were made to the Water Resources Act. The amendments clarified agency responsibilities related to regional water supply planning and development, and included the provisions of the Governor's Executive Order 96-297. The amendments provided direction to Florida's water management districts in the establishment and implementation of minimum flows and levels (MFLs) and the development of regional water supply plans where sources are not adequate to meet future demands.

Requirements for regional water supply plans are that plans shall be based on at least a 20-year planning and development period and shall include, but not be limited to the following components:

- A water supply development component
- A water resource development component
- A recovery and prevention strategy for addressing attainment and maintenance of MFLs in priority water bodies
- A funding strategy for water resource development projects that shall be reasonable and sufficient to pay the cost of constructing or implementing all of the listed projects
- Consideration of how the options addressed serve the public interest, or save costs overall, by preventing the loss of natural resources or avoiding greater future public expenditures for water resource development or water supply development (unless adopted by rule, these considerations do not constitute final agency action)
- The technical data and information applicable to the planning area contained in the District Water Management Plan (DWMP) (SFWMD, 2003b) and necessary to support the regional water supply plans
- The MFLs established for water resources within the planning area

The Upper East Coast Water Supply Plan was updated in 2004. For the remaining three plans – the Kissimmee Basin, Lower West Coast, and Lower East Coast – efforts to update the plans are under way, and are due for completion in a staggered 2006 schedule.

The SFWMD has allocated $295.6 million in FY2005 to implement its regional water supply plans and make 119.4 mgd additional water available. The District is anticipating spending an estimated $1,210.5 million over the FY2005–FY2009 period on water supply plan implementation. This expenditure is designed to result in 483.9 mgd being made available by FY2009. Included in these estimates are Comprehensive Everglades Restoration Plan (CERP) projects with water resource development benefits. The SFWMD is the nonfederal sponsor of the Comprehensive Everglades Restoration Plan (CERP), which, although an environmental restoration plan, includes projects designed to have water resource development benefits.

The regional water supply plans recommended the implementation of projects and actions from two categories: water resource development projects and water supply development options. This is in concert with amendments to Chapter 373, F.S., that were passed in 1997. These changes require regional water supply plans to include a water resource development component and a list of water source options for water supply development that can be chosen by local water users. The statute defines "water resource development" and "water supply development" as follows:

> Water resource development means the formulation and implementation of regional water resource management strategies, including the collection and evaluation of surface water and groundwater data; structural and nonstructural programs to protect and manage resources; the development of regional water resource implementation programs; the construction, operation and maintenance of major public works facilities to provide for flood control, surface and underground water storage and groundwater recharge augmentation; and related technical assistance to local governments and to government-owned and privately owned water utilities.
>
> Water supply development means the planning design, construction, operation and maintenance of public or private facilities for water collection, production, treatment, transmission or distribution for sale, resale or end use.

Implementation of regional water supply plans is central to the planning function, and Section 373.536(6)(a)4, F.S., requires each water management district to annually prepare a five-year water resource development work program that projects expenditure to implement regional water supply plans. This chapter is the fulfillment of that requirement, and includes progress descriptions on the SFWMD's regional water supply plans' recommendations.

Recommendations are outlined herein by region, and include many projects having water resource development benefits implemented through the CERP.

Figure 4-1 illustrates water supply planning areas within the SFWMD.

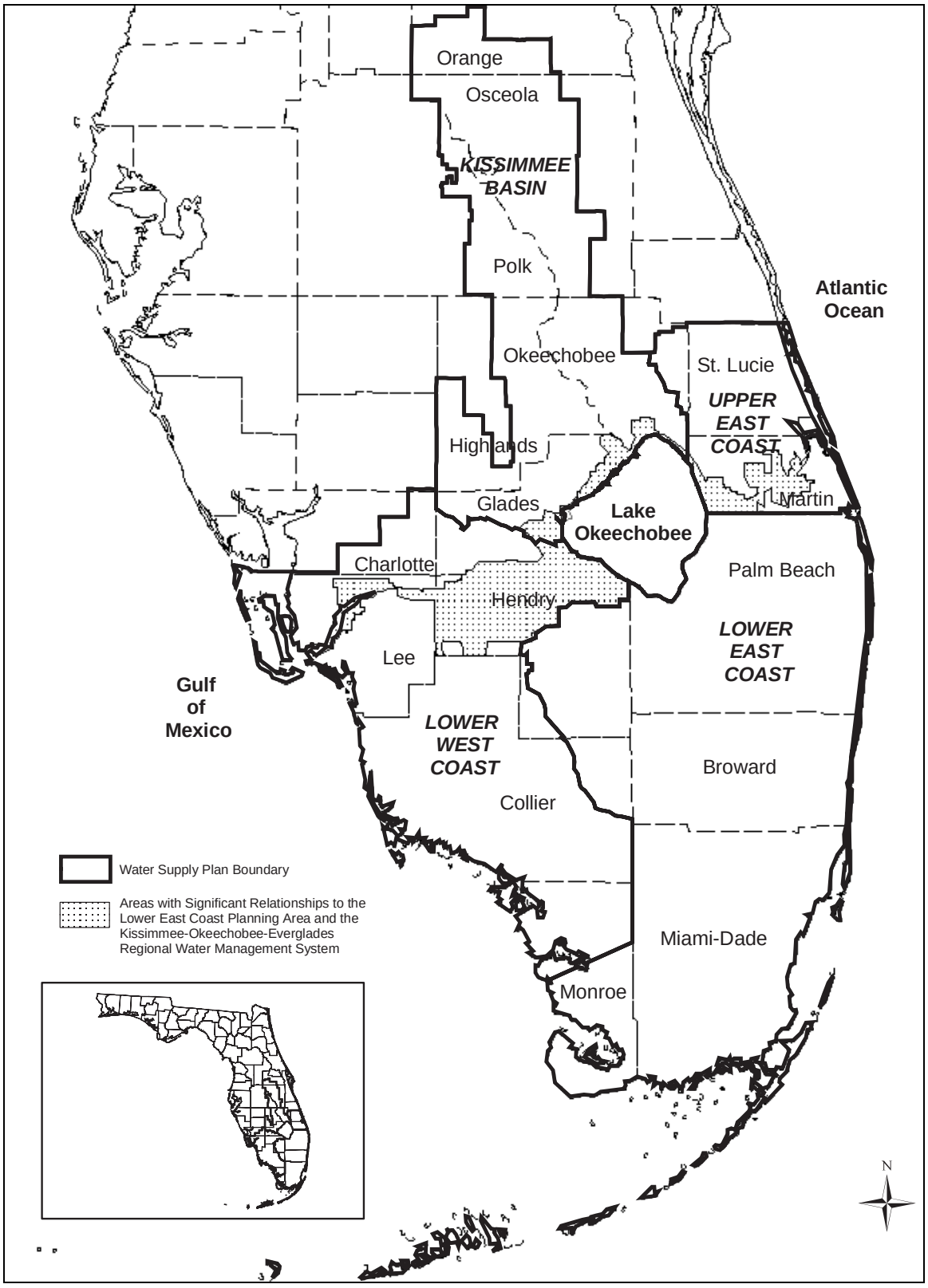

Figure 4-1. Water supply planning areas within the SFWMD.

CHAPTER ORGANIZATION

The following sections provide summaries of the water supply planning implementation efforts by the SFWMD. District-wide efforts are presented first, followed by region-specific activities. Projections are based on fiscal year (FY), which starts on October 1 and ends on September 30.

Regional sections are organized in the manner with which the respective water supply plans were structured. The Kissimmee Basin section is organized based on seven strategies. The Upper East Coast and Lower West Coast sections are organized based on water resource options. Water resource development recommendations in the Lower East Coast section are grouped by the scope, nature, and funding sources of the proposed projects.

A summary of regional water supply plan costs follows the discussions of the water supply plans. Funding needs of the regional water supply plans and CERP (including Critical Projects) are discussed at the end of the chapter.

District-wide Water Resource Development Efforts

District-wide programs include the Wetland Drawdown Study, the District-wide Water Conservation Program, Mobile Irrigation Laboratories, Critical Projects, and CERP. Some water supply plans include recommendations for these programs, but budgeting and funding for these programs is being done on a District-wide basis. Mobile Irrigation Laboratories (MILs) are part of the District-wide Water Conservation Program. Similarly, Critical Projects are part of CERP, but numbers are presented separately. The Wetland Drawdown Study has been completed. **Table 4-1** summarizes the schedule and costs to implement the District-wide Water Conservation Program and the Mobile Irrigation Laboratories over the next five fiscal years. **Table 4-2** lists the Critical Projects. **Table 4-3** presents the CERP schedule and costs.

Wetland Drawdown Study

The Wetland Drawdown Study has been completed and a rule implementing the findings of the study is in effect. The governing board adopted staff-recommended changes to the water use permitting Basis of Review in June 2003, and this rule became effective in September 2003. Section 3.3 of the Basis of Review for Water Conservation Requirements for Consumptive Use Permits (SFWMD, 2003a) establishes the criteria for the protection of wetlands from harm caused by consumptive use withdrawals of water. The SFWMD is presently implementing the new wetland protection criteria.

The SFWMD has initiated numerous rulemaking efforts consistent with the regional water supply plans. A discussion of these is included in the regional sections of this chapter.

District-wide Water Conservation Program

The District's overall water conservation goal is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable uses of water resources. In addition to improving the efficiency of water use, the conservation program strives to improve management of traditional supplies and encourage development of alternative or diverse water supply sources. This includes development of brackish water, reclaimed water for reuse, and aquifer storage and recovery.

To better promote the water conservation goal, the SFWMD funds outreach and education to encourage water users to make efficient use of water resources through conservation and reuse and to increase diversity of water supplies by developing alternative sources (see **Table 4-1**).

The SFWMD supports the following outreach and education activities in its District-wide Water Conservation Program:

- Providing technical assistance to utilities designing conservation programs, reuse projects, or other alternative water supply activities
- Partnering with local governments by providing funds for local conservation activities, outreach, and educational programs, often as elements of integrated water management programs
- Providing media for the public, agencies, and businesses, which provides guidelines for water-efficient landscapes
- Providing cooperative funding in partnerships with other stakeholders to establish water conservation technologies and standards related to landscape and agricultural best management practices
- Coordinating with other water management districts in rulemaking efforts for conservation, with water shortage requirements, and for water use permitting

The District is committed to the conservation of water through reuse. Reuse involves taking domestic wastewater, giving it a high degree of treatment, and using the resulting higher quality reclaimed water for a new, beneficial purpose. The resulting water is called “reclaimed water.” Extensive treatment and disinfection ensures that public health and environmental quality are protected. The District encourages use of reclaimed water for many purposes, including the following:

- Irrigation of large-scale areas such as golf courses and highway medians
- Urban uses such as toilet flushing and decorative lakes
- Agricultural uses and nursery irrigation
- Wetlands creation
- Groundwater recharge
- Industrial uses

Reclaimed water replaces substantial quantities of freshwater supplies. For instance, District-wide in 2003, the use of reclaimed water was almost 225 mgd.

The District provides economic incentives for alternative water supply development: technology-based water savings projects; evaluations of agricultural and urban irrigation systems that lead to recommendations that save billions of gallons of water, save energy, reduce runoff, and reduce the use of chemical fertilizers. The District also provides economic incentives for education and outreach programs District-wide.

The Water Savings Incentive Program (WaterSIP) was created by the SFWMD governing board in 2002 to recognize that the least expensive water is the water that has already been developed. This annual funding program provides matching funds up to $50,000 to water

providers for water-saving technology such as low-flow plumbing fixtures, rain sensors, fire hydrant flushing devices and other hardware that saves water.

The Water Savings Incentive Program (WaterSIP) is an annual funding program for non-capital projects that implement or promote water conservation. Applications are evaluated by a selection committee composed of governing board-appointed members and District staff who then recommend projects to the governing board for funding based on set guidelines and project eligibility criteria, such as amount of water saved. Conceived by the governing board in 2002, the number of applications has increased each year of its existence, with 12 projects recommended for funding in FY2005. Projects that have received funding in previous years were automatic flushing devices for hydrants, pressure stabilization valves, indoor plumbing retrofits, large-area irrigation controls, soil moisture technology, and rain shut-off devices for irrigation systems.

The Alternative Water Supply (AWS) Funding Program was established by the Florida Legislature in 1995 to promote the development of alternative sources of water to offset the growing demand on natural supplies of fresh water. The SFWMD has responded by funding public and private utilities and other entities up to 50 percent of the total cost of capital improvement projects that help implement safe and cost-effective alterative water supplies. Chapter 5 of this volume of the *2005 South Florida Environmental Report* (SFER) is the Alternative Water Supply Annual Report.

The AWS program is an annual program, opened from January to April, in which applications for capital projects are evaluated by a selection committee. The selection committee reviews and scores applications according to prescribed criteria such as consumptive use permits, goals and objectives of regional water supply plans, and environmental benefits. The recommended projects are brought to the governing board for approval of funding.

Since 1996, almost 340 million gallons a day (mgd) of additional water has been created with $28 million of District cooperative funding. Types of projects funded typically include development of brackish water, such as the Floridan aquifer, reuse of water, and aquifer storage and recovery. These projects must be completed within three years. Funds are distributed when the project is completed. In FY2005, the SFWMD contributed $6 million to 28 water supply projects as part of the Alternative Water Supply Funding Program. These projects, when completed, are designed to produce 66.12 million gallons of water a day. This would bring the total amount of water created by the AWS program to 406 mgd.

Although the AWS Funding Program is a District-wide program, the number of projects that receive funding depends on the number of applications submitted from each of the regions. Since FY1997, the Lower East Coast – the largest of the four planning regions – has had the most projects funded. This is followed by the Lower West Coast, the Upper East Coast, and the Kissimmee Basin.

In addition to funds identified in the Five-Year Water Resource Development Work Program, the SFWMD has budgeted $4,801,675 in FY2005 for water supply or water resource development projects. These funds would supplement the Alternative Water Supply Funding Program (Chapter 5) and facilitate implementation of locally supported water projects.

The Mobile Irrigation Lab Program consists of specialized labs on wheels that conduct irrigation audits on agricultural and urban irrigation systems. These labs make recommendations to improve operation, maintenance and design of systems, as well as make conservation education presentations. The purpose of the labs is to reduce irrigation water waste. The first agricultural lab was established in Collier County in 1988. The first urban labs were established

in Lee and Palm Beach counties in 1994. There are currently nine labs in the 16-county region served by the SFWMD. Eight of these labs are supported by District funds. These labs perform evaluations in 10 of the 16 counties. The program is a partnership between the District, the United States Department of Agriculture – Natural Resources Conservation Service, the Florida Department of Agriculture and Consumer Services, and local Soil and Water Conservation Districts. The Soil and Water Conservation Districts employ staff to operate the labs. The District currently supports mobile irrigation laboratories in the Lower East Coast, Lower West Coast, and Upper East Coast planning areas. Each urban lab costs the District approximately $56,000 a year and saves over 50 million gallons of water a year per lab. The agricultural labs cost the District approximately $104,000 a year and save over 200 million gallons of water a year per lab.

Table 4-1. Funding for District-wide, non-CERP efforts FY2005–FY2009.

Comprehensive District-wide Water Resource Development Efforts	District-wide Implementation Costs ($1,000s and FTEs)											
	FY2005		FY2006		FY2007		FY2008		FY2009		Total Cost FY2005–FY 2009	
	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Wetland Drawdown Study	Complete.											
Comprehensive Water Conservation Program		5.00		7.00		7.00		7.00		7.00		
1. Alternative Water Supply Funding Program	6,000		6,500		7,000		7,000		7,000		33,500	33.00
2. Water Savings Incentive Program	500		500		600		600		600		2,800	
3. Mobile Irrigation Laboratories	503		621		621		621		621		2,987	
TOTAL	**7,003**	**5.00**	**7,621**	**7.00**	**8,221**	**7.00**	**8,221**	**7.00**	**8,221**	**7.00**	**39,287**	**33.00**

Comprehensive Everglades Restoration Plan (CERP)

The SFWMD is the nonfederal sponsor of CERP. Although CERP is an environmental restoration plan, some projects within CERP have water resource development benefits.

Included in CERP are several Critical Projects that were authorized by Section 528 of the Water Resource Development Act of 1996. The purpose of the Critical Project Program was to develop specific water quality-related projects that are essential to the restoration of South Florida's natural systems. While these projects are part of CERP, they are listed separately in **Table 4-2**.

The remaining CERP components that have projected activity (funds or FTEs expended) in the FY2005–FY2009 time period are shown in **Table 4-3**. **Tables 4-2** and **4-3** include the SFWMD cost of each element with the understanding that CERP is a fifty-fifty cost share with the United States Army Corps of Engineers (USACE). Tables include the nonfederal share of the projects' costs with the understanding that there may be local cost sharing for certain projects. More detailed information about each element is available from several sources. Element descriptions are available in the Central and Southern Florida (C&SF) Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement (USACE and SFWMD, 1999), referred to as the Restudy and the Master Program Management Plan (USACE and SFWMD, 2000). Current project descriptions and implementation status information is maintained on the CERP Website, at http://www.evergladesplan.org/, in Acceler8, http://www.evergladesnow.org/, and in the CERP Annual Report.

Table 4-2. Nonfederal funding for critical projects FY2005–FY2009.

Critical Projects	District-wide Implementation Costs ($1,000s)					
	FY2005	FY2006	FY2007	FY2008	FY2009	Total Cost FY2005–FY2009
	$	$	$	$	$	$
Ten Mile Creek Critical Project	1,318	5,573	3,628	200	200	10,919
Tamiami Trail Culverts (West) Critical Project	5,096	10,171	6,220	200	200	21,887
Western C-4 Structure Critical Project	Complete.					0
Southern CREW Project Addition	2,070	20	20	20	20	2,150
Lake Trafford Restoration	7,913	10,000	10,000	68	20	28,001
Lake Okeechobee Water Retention/Phosphorus Removal	212	1,519	419	419	419	2,988
Western C-11 (S-9) Water Quality Improvement	200	1,618	110	110	110	2,148
Critical Restoration Program Controls	Complete.					0
TOTAL	**16,809**	**28,901**	**20,397**	**1,017**	**969**	**68,093**

The CERP projects listed above include operations and maintenance costs. Previous year project projections that were included in this table did not include operations and maintenance costs.

Table 4-3. Nonfederal funding for CERP projects FY2005–FY2009.

Project Name	FY2005	FY2006	FY2007	FY2008	FY2009	Total FY2005–FY2009
District-wide						
ASR Regional Study	761,149	91,154	9,855,070	9,759,250	24,252,304	44,718,927
Reconnaissance, Feasibility, Planning Studies	1,839,429	264,600	0	0	0	2,104,029
Monitoring, Evaluation (RECOVER)	4,932,617	6,431,011	6,314,663	6,567,067	6,431,011	30,676,369
CERP Program Management, Support	25,060,041	14,921,828	13,949,000	13,422,500	13,222,500	80,575,869
CERP Program Reserves	50,378,980	0	0	0	0	50,378,980
Kissimmee Basin						
Lake Okeechobee Watershed	476,216	44,939,004	24,353,601	29,174,373	17,418,800	116,361,994
Lake Istokpoga Regulation Schedule	0	0	0	0	0	0
Lake Okeechobee ASR Pilot	117,010	0	1,896,154	2,007,692	1,141,538	5,162,394
Upper East Coast						
Indian River Lagoon–South	57,112,750	41,713,707	23,114,356	30,700,459	29,805,688	182,446,960
Lower West Coast						
C-43 Basin Storage Reservoir–Part 1	2,286,040	44,512,135	21,371,635	0	0	68,169,810
C-43 Basin Aquifer Storage and Recovery–Part 2	0	0	0	36,923	1,310,500	1,347,423
Caloosahatchee Backpumping with Stormwater Treatment	0	514,800	514,800	3,012,336	4,770,528	8,812,464
Big Cypress/L-28 Interceptor Modifications	0	338,857	729,287	1,845,766	1,838,721	4,752,631
Southern Golden Gates Estates Hydrologic Restoration	12,927,797	2,100,000	2,100,000	2,100,000	2,100,000	21,327,797
Caloosahatchee (C-43) River ASR Pilot	73,449	261,538	300,000	288,462	200,000	1,123,449
Lower East Coast						
Everglades Agricultural Areas Storage Reservoirs–Phase 1	40,722,694	0	0	0	0	40,722,694
Everglades Agricultural Areas Storage Reservoirs–Phase 2	0	902,200	1,121,772	19,673,096	19,555,988	41,253,056
WCA-3A Decomp & Sheet Flow Enhancement-Part 1	888,024	194,171	13,217	0	0	1,095,412
WCA-3A Decomp & Sheet Flow Enhancement-Part 2	0	116,538	952,353	1,042,206	761,223	2,872,320
Flow to NW & Central WCA-3A	0	158,592	105,185	0	0	263,777
Loxahatchee National Wildlife Refuge Internal Canal Structures	0	101,058	4,808	0	0	105,866
Modify Holey Land Wildlife Management Area Operation Plan	0	16,667	16,667	8,205	0	41,539
Modify Rotenberger Wildlife Management Area Operation Plan	0	19,922	0	0	0	19,922
North Palm Beach County–Part 1	55,899,186	23,178,571	38,160,071	40,719,445	0	157,957,273
North Palm Beach County–Part 2	0	0	0	0	125,769	125,769
PBC Agriculture Reserve Reservoir–Part 1	12,839	199,450	149,500	5,004,047	14,544,811	19,910,647

Table 4-3. Continued.

Project Name	FY2005	FY2006	FY2007	FY2008	FY2009	Total FY2005–FY2009
PBC Agriculture Reserve Reservoir Aquifer Storage & Recovery–Part 2	0	0	0	0	125,769	125,769
Broward County Secondary Canal System	0	456,878	100,000	100,000	100,000	756,878
Everglades National Park Seepage Management	0	91,154	790,116	2,881,298	32,960,522	36,723,090
Biscayne Bay Coastal Wetlands	1,601,796	35,403,676	19,215,623	15,317,238	20,180,536	91,718,869
C-111 Spreader Canal	522,622	13,192,838	13,076,000	13,176,585	5,833,908	45,801,953
C-111 Project Implementation	9,551,569	0	0	0	0	9,551,569
Florida Keys Tidal Restoration	96,172	0	5,000	5,000	5,000	111,172
Hillsboro ASR Pilot	63,870	29,231	300,000	287,726	233,043	913,870
Hillsboro Aquifer Storage & Recovery–Part 2	0	0	0	0	125,769	125,769
Flow to Eastern Water Conservation Area	0	0	0	0	83,077	83,077
Lake Belt In-Ground Reservoir Technology Pilot	29,107	84,767	77,844	78,443	78,144	348,305
L-31N Seepage Management Pilot	198,845	63,421	0	0	0	262,266
Wastewater Reuse Technology Pilot	238,861	1,317,500	240,000	241,846	181,792	2,219,999
Acme Basin B Discharge	96,574	0	285,000	285,000	285,000	951,574
Strazzulla Wetlands	37,209	0	25,000	50,000	50,000	162,209
Site 1 Impoundment	140,230	0	200,000	200,000	200,000	740,230
Broward County Water Preserve Area	1,373,769	1,294,787	1,286,932	1,290,876	1,109,059	6,355,423
C-4 Structure (previously Dade-Broward Levee, C-4 Eastern Structure)	0	0	0	0	0	0
Bird Drive Recharge Area	750,000	0	0	0	0	750,000
Water Preserve Area Conveyance	0	0	0	0	0	0
TOTAL	**$268,188,845**	**$232,910,055**	**$180,623,654**	**$199,275,839**	**$199,031,000**	**$1,080,029,393**

1. Cost estimates for individual CERP projects reflect the FY2005 budget as approved by the SFWMD Governing Board on September 21, 2004 and project schedules based on the Master Implementation Sequencing Plan (USACE and SFWMD, 2001) version 1.0, developed jointly with the U.S. Army Corps of Engineers, modified to include completed individual Project Management Plans. Projected land acquisition has been modified to reflect an advanced acquisition schedule developed by District staff. Since the adoption of the FY2005 budget, the CERP "Acceler8" plan was announced by the Governor. According to this plan, the SFWMD will provide the funding and expedite the construction of certain CERP priority projects. The SFWMD will continue to work with its federal partner to jointly fund the overall CERP program.

2. The CERP projects listed above include operations and maintenance costs. Previous year project projections that were included in this table did not include operations and maintenance costs.

Other Funding for District-wide Water Resource Development Contracts

The SFWMD has budgeted $1,099,990 in FY2005 for Water Resource Development Contracts that are considered to be of benefit District-wide. These funds are not captured on any of the tables associated with implementation of the regional water supply plans. The contracts provide for the collection of hydrologic and groundwater data, Geographic Information Systems (GIS) support for modeling, and technical editing of model documentation and regional water supply plans.

2000 KISSIMMEE BASIN WATER SUPPLY PLAN

PLAN ORGANIZATION

The Kissimmee Basin Water Supply Plan (SFWMD, 2000b) was organized to present strategies, which, in turn, provide recommendations to address resource issues. An evaluation of the demands and water resources for the Kissimmee Basin Planning Area suggested that the groundwater supplies may not be sufficient to meet the 2020, 1-in-10-year drought water supply needs of the planning area. In addition, the SFWMD is required to ensure that it is in compliance with the Seminole Water Rights Compact and other water use agreements between the Seminole Indian Tribe of Florida, local entities, the state of Florida, and the SFWMD. In the Kissimmee Basin Water Supply Plan, the SFWMD identified seven strategies and 14 recommendations. The seven Kissimmee Basin Strategies are as follows:

1. Minimize Floridan Aquifer drawdown through recharge
2. Minimize Floridan Aquifer drawdown through reduction of demands
3. Optimize use of the Floridan Aquifer and develop alternative sources
4. Develop alternative water resources
5. Develop a water management plan for the Lake Istokpoga-Indian Prairie Basin
6. Coordinate among water management districts
7. Ensure consistency between planning, development, and water use permitting both internally and between the water management districts

Information Provided

The summary of each of the seven strategies includes a description, a list of recommendations, funding sources, implementing agencies, costs to nonfederal entities, primarily the District and estimates of total District staff time required in full-time equivalents (FTEs) to implement the option.

The schedule and costs to implement the recommendations in the Kissimmee Basin Water Supply Plan over the next five fiscal years are summarized in **Table 4-4** at the end of this section. In addition, estimates are provided (to the extent that can be determined) of the amount of water that will be made available for each recommendation in **Table 4-5**, also at the end of this section.

Strategies and Recommendations

STRATEGY 1. MINIMIZE FLORIDAN AQUIFER DRAWDOWN THROUGH RECHARGE

This strategy involves reducing the amount of projected drawdown on the Floridan Aquifer by placing more water into the aquifer to replenish the amount removed. Sources identified for this recharge were reclaimed water and storm water. To minimize Floridan Aquifer drawdown through recharge, wastewater and stormwater reuse, reservoirs, drainage wells, and aquifer storage and recovery (ASR) options were investigated. Evaluation of these options requires the

utilization of numerical models and the collection of hydrologic information for the construction of these models. Recommendation 1.1: Develop a regional reclaimed water optimization plan, and Recommendation 1.2: Develop stormwater reuse master plans, were identified for implementation under this strategy.

SUMMARY OF IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 1.1. Develop a Regional Reclaimed Water Optimization Plan. Between FY2001 and FY2004, four projects were implemented by the SFWMD, which contributed to developing a regional reclaimed water optimization plan; the total District cost was $270,000. The projects included installation of climatic and shallow aquifer monitoring stations, continued lakes monitoring network, and Phase 1 of the Reclaimed Water Injection Pilot Study.

The Reclaimed Water Injection Pilot Study has not been initiated due to lack of local interest. In addition, in FY2004 and continuing in FY2005, the SFWMD will finalize a Reclaimed Water Master Plan for Central Florida that will quantify the availability of reclaimed water supplies, identify major users, and evaluate the use of reclaimed water in offsetting freshwater demands projected for 2025.

Recommendation 1.2. Develop Stormwater Reuse Master Plans. During FY2004 and FY2005, the SFWMD continued its support of the Artificial Recharge Project, led by the St. Johns River Water Management District. Phase 2 of the Drain Well Treatment Pilot Project has not been initiated due to lack of local interest. During FY2004, a draft of the water availability from Shingle and Boggy Creeks was presented to the public for review, and will be completed in FY2005. Recommendation 1.2 for FY2005 is estimated to use 0.1 FTEs and no funding. The SFWMD has chosen to complete this work in-house.

STRATEGY 2. MINIMIZE FLORIDAN AQUIFER DRAWDOWN THROUGH REDUCTION OF DEMANDS

Urban and agricultural conservation and reuse can minimize drawdown on the Floridan Aquifer. The 2000 Kissimmee Basin Water Supply Plan recommended an improved District-wide Water Conservation Program; this recommendation is being implemented and expanded. The Conservation Program provides economic incentives for water use reduction projects, development of alternative water supplies, and evaluations of urban and agricultural irrigation systems which lead to water and energy saving, reductions in runoff, and less use of chemical fertilizers. Program staff also provides technical assistance in helping utilities develop customized water conservation programs, and establishing efficiency goals that are cost effective and achievable. Recommendation 2.1 specifies development of comprehensive conservation measures for the District.

SUMMARY OF IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 2.1. Develop a Comprehensive Water Conservation Program. For status on the implementation of the Comprehensive Water Conservation Program, please refer to the earlier section of this chapter entitled District-wide Water Conservation Program.

STRATEGY 3. OPTIMIZE USE OF THE FLORIDAN AQUIFER AND DEVELOP ALTERNATIVE SOURCES

Alternative water source options identified in the Kissimmee Basin Water Supply Plan include reclaimed water, surface water, brackish groundwater, and additional fresh groundwater. The collection of necessary hydrologic information and development of models will be performed to accurately identify resource concerns and determine the optimized use of the Floridan Aquifer. Additional studies to quantify the availability of surface water, reuse, and other sources are also performed under the strategy. Recommendation 3.1: Research and develop alternative water supplies, and 3.2: Determine the optimized use of the Floridan Aquifer, are the recommendations specified under this strategy.

SUMMARY OF IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 3.1. Research and Develop Alternative Water Supplies. Under Recommendation 3.1, District staff evaluated water availability from surface water features including the Kissimmee Chain of Lakes and its tributaries. The work involved modeling of the Chain of Lakes system and statistical analyses of Shingle and Boggy Creek flows. Much of this effort is being performed by District staff in FY2004 and FY2005. In addition, the feasibility assessment between the Tohopekaliga Water Authority and the District to evaluate Shingle Creek for reuse augmentation and aquifer recharge continues with final design completed in FY2004 and potential construction in FY2005.

Recommendation 3.2. Determine the Optimized Use of the Floridan Aquifer. The District has completed its deep well drilling program in FY2004, after construction and monitoring of six new sites. In addition, a total of 40 shallow wells at 22 sites were constructed as part of Shallow-Floridan Aquifer Study. Construction of the shallow wells and installation of recording equipment of three additional sites is planned for FY2005.

STRATEGY 4. DEVELOP INDIAN PRAIRIE BASIN ALTERNATE WATER RESOURCES

DESCRIPTION/DISCUSSION

New water resources are proposed for investigation and developed for the Indian Prairie Basin portion of the Kissimmee Basin Planning Area. Among these alternatives are Lake Okeechobee, the Kissimmee River, and additional groundwater. A draft plan for the operation of two or more pumps to move water from Lake Okeechobee to the Southern Indian Prairie Basin was developed in FY2004. Additionally, as a result of restoration efforts, the Kissimmee Basin Water Supply Plan proposed investigating the availability of water supplies from the Kissimmee River. Recommendation 4.1: Develop an operational plan for backpumping from Lake Okeechobee, and 4.2: Investigate the availability of water from the Kissimmee River, are the recommendations specified under this strategy.

SUMMARY OF CHANGES/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 4.1. Develop an Operational Plan for Backpumping from Lake Okeechobee. An operational plan for the Southern Indian Prairie Basin was drafted in FY2004. The plan will undergo a public review process in FY2005. The use of water from Lake Okeechobee is being coordinated with model development of the 2005 Lower East Coast Water Supply Plan planning process and the CERP implementation process.

Recommendation 4.2. Investigate the Availability of Water from the Kissimmee River. Restoration of the Kissimmee River is one of several top priorities of the SFWMD, and until restoration is completed, use of water from the Kissimmee River for those portions being restored will be evaluated on a case-by-case basis. In 2004, the District initiated development of a modeling and management plan for the Kissimmee Chain of Lakes as part of the restoration effort. Evaluation of future water supply from the Kissimmee River will be included in the Kissimmee Chain of Lakes Long-Term Management Plan through FY2005

STRATEGY 5. DEVELOP A WATER MANAGEMENT PLAN FOR THE LAKE ISTOKPOGA-INDIAN PRAIRIE BASIN

DESCRIPTION/DISCUSSION

The Kissimmee Basin Water Supply Plan recommended a water management plan for the Lake Istokpoga-Indian Prairie Basin. Plan elements will be considered with efforts to evaluate CERP storage basins north of Lake Okeechobee. This would include considering current regulation and minimum operation schedules and establishing a minimum flow and level (MFL) for Lake Istokpoga. An operational plan for control structures on Lake Istokpoga and the SFWMD canal system is proposed to be a part of this plan. Recommendation 5.1: Develop a water management plan for the Lake Istokpoga-Indian Prairie Basin, and Recommendation 5.2: Evaluate regional storage, are the recommendations specified under this strategy.

SUMMARY OF IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 5.1. Water Management Plan for Lake Istokpoga-Indian Prairie Basin. The effort to develop a management plan for the entire Lake Istokpoga-Indian Prairie Basin has been combined with the District's efforts to revise the operational schedule for Lake Istokpoga and the identification of water storage basins north of Lake Okeechobee. Both of the latter projects are CERP-related and may have impact on plans previously developed. The regulation review and the basin determination are scheduled for completion in FY2005, prior to completion of the 2005 Kissimmee Basin Water Supply Plan. In addition, the effort to set a MFL for Lake Istokpoga is expected to be completed in FY2005, and will be incorporated into any management plan.

Recommendation 5.2. Evaluate Regional Storage. The effort to evaluate a regional storage facility for the Indian Prairie Basin has been combined with the District's efforts to identify water storage basins north of Lake Okeechobee for water quality improvement. Work on this effort is expected for completion in FY2005.

STRATEGY 6. COORDINATION AMONG WATER MANAGEMENT DISTRICTS

DESCRIPTION/DISCUSSION

Coordination among the District's local groups and other state agencies was identified in the 2000 Kissimmee Basin Water Supply Plan as an important strategy in implementing the water supply plan. The District has continued an extensive coordination effort with the St. Johns River Water Management District (SJRWMD), the Southwest Florida Water Management District (SWFWMD), and the Florida Department of Environmental Protection (FDEP) to maximize consistency in criteria and approaches related to: resource protection criteria, hydrologic investigations, improved hydrologic modeling; local sources first, MFLs and water shortage declarations. The District holds coordination meetings on a monthly basis to discuss issues and planning efforts. Recommendation 6.1 specifies District coordination with the SJRWMD, the SWFWMD, and the FDEP.

SUMMARY OF IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 6.1. Coordinate with the SJRWMD, the SWFWMD, and the FDEP. In FY2004 and continuing in FY2005, the District will participate in the East Central Florida Water Supply Initiative sponsored by Orange County and the SJRWMD. Twice a year, the three water management districts meet in accordance with the Inter-district Memorandum of Understanding and cooperate on several construction and investigative projects. The districts continue to exchange water management data, such as water use projections for Central Florida and geologic/hydrologic data for coordination on the Kissimmee Basin/Eastern Central Florida regional groundwater model. In FY2004, the SFWMD and the SJRWMD reached a Memorandum of Understanding to delegate water use permitting authority for certain permits in Orange County.

STRATEGY 7. ENSURE CONSISTENCY BETWEEN PLANNING AND WATER USE PERMITTING

DESCRIPTION/DISCUSSION

Salient portions of the Kissimmee Basin Water Supply Plan will be incorporated into the Consumptive Use Permitting (CUP) Program through rulemaking. The single recommendation under this strategy is Recommendation 7.1: Continue rulemaking efforts.

SUMMARY OF IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 7.1. Continue Rulemaking Efforts. In FY2004, the District completed rulemaking on water use allocation and wetland impacts. In FY2004 and continuing into FY2005, the District has proposed rulemaking efforts to lift the current moratorium on surface water use in the Southern Indian Prairie Basin and initiated rule development in early FY2005.

Summary of Kissimmee Basin Water Supply Plan Costs and Schedules

Table 4-4. Summary of estimated schedule and SFWMD costs for water resource development recommendations in the Kissimmee Basin Water Supply Plan.

Strategies and Recommendations		Plan Implementation Costs ($1,000s and FTEs) Funding after FY2005 dependent upon an Update in 2005											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total FY2005–FY 2009	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Orange – Osceola County Area													
Strategy 1: Minimize Floridan Aquifer Drawdown through Recharge													
1.1	Develop a regional reclaimed water optimization plan	0	0.35	0	0.00	Complete.						0	0.35
1.2	Develop stormwater reuse plans	0	0.10	0	0.00	Complete.						0	0.10
	Subtotal	**0**	**0.45**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.45**
Strategy 2: Minimize Floridan Aquifer Drawdown through Reduction of Demands													
2.1	Develop a comprehensive water conservation program	See Table 4-1. Funding for District-wide, non-CERP efforts											
Strategy 3: Optimize Use of the Floridan Aquifer and Develop Alternative Sources													
3.1	Research and develop alternative water supplies	0	1.50	Complete.									1.50
3.2	Determine the optimized use of the Floridan Aquifer	275	2.75	Complete.								275	2.75
	Subtotal	**275**	**4.25**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**275**	**4.25**
Lake Istokpoga – Indian Prairie Basin													
Strategy 4: Develop Alternative Water Resources													
4.1	Develop an operational plan for backpumping from Lake Okeechobee	0	0.50	Complete.								0	0.50
4.2	Investigate the availability of water from the Kissimmee River	0	0.50	Complete.								0	0.50
	Subtotal	**0**	**1.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**1.00**
Strategy 5: Develop a Water Management Plan for the Lake Istokpoga – Indian Prairie Basin													
5.1	Develop a water management plan for the Lake Istokpoga – Indian Prairie Basin	30	1.50	Complete.								30	1.50
5.2	Evaluate regional storage	See Table 4-3 Nonfederal Funding for CERP Projects FY2005-FY2009.											
	Subtotal	**30**	**1.50**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**30**	**1.50**
Related Strategies													
Strategy 6: Coordination among Water Management Districts													
6.1	Coordinate with the SJRWMD, the SWFWMD and the FDEP	0	1.00	0	1.00	0	1.00	0	1.00	0	1.00	0	5.00
	Subtotal	**0**	**1.00**	**0**	**1.00**	**0**	**1.00**	**0**	**1.00**	**0**	**1.00**	**0**	**5.00**
Strategy 7: Ensure Consistency between Planning and Water Use Permitting													
7.1	Continue rulemaking efforts	Complete.											
	Subtotal	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0**	**0**
	TOTAL	**305**	**8.20**	**0**	**1.00**	**0**	**1.00**	**0**	**1.00**	**0**	**1.00**	**305**	**12.20**

Summary of the Quantity of Water to Be Made Available by Implementation of the Kissimmee Basin Water Supply Plan

Table 4-5. Water made available through implementation of the Kissimmee Basin Water Supply Plan in FY2005 and by FY2009 (FY2005–2008).

Recommendation		Est. Water Made Available (mgd)	
		In FY2005	By FY2009
1	**Florida Aquifer Drawdown – Recharge**		
1.1	Develop a Regional Reclaimed Water Optimization Plan	3.50	3.50
1.2	Develop Stormwater Reuse Master Plans	0.00	0.00
2	**Florida Aquifer Drawdown – Demands**		
2.1	Develop a Comprehensive Water Conservation Program*		
	Mobile Irrigation Laboratories	*see below	*see below
	Water Savings Incentive Program	7.90	4.80
	Water Conservation Outreach and Education	*see below	*see below
	Alternative Water Supply Funding Program	*see below	*see below
3	**Floridan Aquifer – Alternative Sources**		
3.1	Research and Develop Alternative Water Supplies	3.00	7.70
3.2	Determine Optimized Use of the Floridan Aquifer	0.00	0.00
4	**Alternative Water Resources**		
4.1	Develop an Operational Plan for Backpumping from Lake Okeechobee	0.00	41.00
4.2	Investigate the Availability of Water from the Kissimmee River	0.00	0.00
5	**Lake Istokpoga – Indian Prairie Basin**		
5.1	Develop a Water Management Plan for the Lake Istokpoga – Indian Prairie Basin	0.00	15.00
5.2	Evaluate Regional Storage	0.00	0.00
6	**Water Management Coordination**		
6.0	Inter-district and FDEP Coordination	0.00	0.00
7	**Planning and Water Use Permitting**		
7.0	Continue Rulemaking Efforts	0.00	0.00
	TOTAL	**14.40**	**72.00**

* See discussion in the District-wide Water Conservation Program section and Table 4-1, Funding for District-wide, non-CERP efforts FY2005–FY2009.

2004 UPPER EAST COAST WATER SUPPLY PLAN

PLAN ORGANIZATION

The 2004 update of the Upper East Coast Water Supply Plan was approved by the SFWMD governing board in June 2004. Issue identification is an important part of the planning process; several issues including surface water availability, Floridan Aquifer water quality, freshwater flow regimes to the St. Lucie Estuary and Loxahatchee River, saltwater intrusion vulnerability, and potential cumulative impacts to wetlands were identified in the 2004 Plan. Eight water source options were identified to meet the projected demands through at least 2025:

1. Aquifer Storage and Recovery
2. Conservation
3. Floridan Aquifer System
4. Reclaimed Water
5. Reservoirs
6. Seawater
7. Surface Water
8. Surficial Aquifer System

Overall, from a regional perspective, it was concluded that with appropriate management and diversification of water supply sources, there is sufficient water to meet the needs of the Upper East Coast Planning Area during a 1-in-10-year drought condition through the year 2025. The Plan contains 26 water resource development recommendations to support development of these water source options. In addition to the recommendations of this plan, CERP will maximize water resources by addressing issues of timing, retention, and freshwater flow regimes to the coastal environmental resources in the planning area and increase availability of fresh water for future use.

For public water supply, continued use of the Surficial Aquifer at current levels and continued development of the saline Floridan Aquifer showed the most promise of satisfying the growing needs for potable water. Most of the coastal utilities have already begun transitioning to the Floridan Aquifer. A greater understanding of the impact of long-term, sustained withdrawals from this aquifer is needed. Recommendations include continued monitoring of the existing Comprehensive Floridan Aquifer monitoring network, hydrogeologic investigations, and development of a regional Floridan Aquifer water quality groundwater model.

The scenario that showed the most promise of meeting future needs for landscape irrigation was continued use of the Surficial Aquifer at current levels and continued development of reclaimed water. Additional withdrawals from the Surficial Aquifer for landscape irrigation may be possible on a project-by-project basis. In 2003, over 40 percent or 8 million gallons per day (mgd) of the wastewater treated in the region was reused for a beneficial purpose – mostly for irrigation of residential lots, golf courses, medians, and other green space. Recommendations to promote increased use of reclaimed water are to encourage and assist local governments and utilities to consider establishing mandatory reuse zones and development of other water sources to supplement reclaimed water supplies and to encourage interconnects between reuse systems.

For agricultural irrigation, predominately citrus, a combination of surface water from the C-23, C-24, C-25, and C-44 canals supplemented with Floridan Aquifer water is sufficient to meet the existing and projected needs during a 1-in-10-year drought event. Growth in overall agricultural demand from 2000 levels is not anticipated. Construction of storage reservoirs proposed in the CERP Indian River Lagoon–South Project will enhance surface water availability

and reduce reliance on the Floridan Aquifer. To promote more efficient water use, recommendations include implementation of voluntary best management practices, continued conversion of seepage/flood irrigation systems to micro-irrigation, and the use of the existing agricultural mobile irrigation laboratories.

The plan places strong importance on water conservation through implementation of user-specific water conservation plans. Continued emphasis on water conservation should be given in the District's Consumptive Use Permitting Program. It is recommended to continue use of the existing urban mobile irrigation laboratories and increase funding to the Water Savings Incentive Program, a cooperative funding program for projects that result in measurable water savings (e.g., landscape and indoor equipment retrofits).

Freshwater discharges to the St. Lucie River and Estuary and the Indian River Lagoon pose problems in maintaining a healthy estuarine system. The Upper East Coast Plan supports construction of the CERP Indian River Lagoon–South Project Implementation Report recommendations and the Ten-Mile Creek Critical Restoration Project. These were initiated in 2003 to address regional storage and freshwater flows from the watershed. The Upper East Coast Plan also supports CERP and possible modifications to the Lake Okeechobee Regulation Schedule to address freshwater discharges from Lake Okeechobee via the C-44 canal. Water reservations for the protection of fish and wildlife will be established for the St. Lucie River and southern Indian River Lagoon pursuant to the CERP Indian River Lagoon–South Project Implementation Report.

In contrast to concerns of freshwater encroachment in estuarine systems, the Loxahatchee River has been significantly affected by the creation of the Jupiter Inlet and construction of the C-18 canal. Installation of drainage projects for agricultural and urban development have lowered water tables and reduced the amount of fresh water available to the Loxahatchee River. These changes have significantly altered natural flow patterns, allowing salt water to move further up the river, resulting in the displacement of freshwater wetland species by estuarine species. Continued implementation of projects in the Northern Palm Beach County Comprehensive Water Management Plan (SFWMD, 2002) and recommendations in the Lower East Coast Regional Water Supply Plan (SFWMD, 2000d) are recommended to begin to address freshwater flows to the Loxahatchee River. In addition, establishment of a water reservation for the Northwest Fork of the Loxahatchee River, development of a restoration plan, completion of the CERP North Palm Beach County Part 1 Project Implementation Report, and establishment of minimum flows and levels (MFLs) for the tributaries to the Northwest Fork of the Loxahatchee River are recommended.

The conclusions and recommendations of this Upper East Coast Water Supply Plan Update (SFWMD, 2004b) are consistent with those of the 1998 Upper East Coast Water Supply Plan (SFWMD, 1998a). Much progress has been made in implementing the recommendations of the 1998 Plan and development of alternative water sources; water users have diversified their supply sources and reduced reliance on the Surficial Aquifer. Conversion of agricultural seepage irrigation systems to micro-irrigation has continued, and significant efforts since 1998 have resulted in strategies and designs for surface water storage to better manage freshwater flows to the coastal resources.

The schedule and costs to implement the recommendations in the 2004 Upper East Coast Water Supply Plan over the next five years are summarized in **Table 4-6**. Estimates to the extent that can be determined are provided of the amount of water that will be made available for each recommendation in **Table 4-7**.

Water Resource Development Recommendations

As the UEC Water Supply Plan was just updated in June of 2004, it's premature to provide information on the implementation of these new recommendations. A list of the 2004 UEC Update recommendations follows:

SUMMARY OF RECOMMENDATIONS

1. AQUIFER STORAGE AND RECOVERY

Recommendation 1. The District will provide technical assistance to utilities pursuing aquifer storage and recovery to comply with local, state, and federal standards. Aquifer storage and recovery could be used for storage of available water sources for later use.

2. CONSERVATION

Recommendation 2. Continue mobile lab presence and expand activity. The District will continue to fund the existing urban mobile irrigation labs in the UEC Planning Area. There are two urban mobile irrigation labs funded by the District and one agricultural lab funded by USDA–NRCS in the UEC Planning Area. Additionally, the District should look for opportunities to expand urban mobile lab activity. This could include local government partnerships funding increased lab services, particularly in newer urban communities.

Recommendation 3. Complete rulemaking for Water Conservation. The District should complete the ongoing rulemaking in Chapter 40E-2, F.A.C., and the Basis of Review, which will focus on goal-based conservation programs for public water suppliers, and other major water users.

Recommendation 4. Continue funding of the Water Savings Incentive Program. The District should continue to fund and enhance the Water Savings Incentive Program (WaterSIP) to facilitate implementation of cost-effective indoor and outdoor retrofits, such as plumbing and rain sensor programs in the UEC Planning Area. This cost-share program may benefit public agencies, such as local governments, water utilities or private entities, such as homeowners associations.

Recommendation 5. Expand water conservation outreach and education. The District, in cooperation with local governments, utilities, large water users, and water industry professional organizations, should expand water conservation outreach and education through funding partnerships.

3. FLORIDAN AQUIFER SYSTEM

Recommendation 6. Continue to collect data from the comprehensive regional Floridan Aquifer monitoring well network. The District should continue to collect water level, water quality, and water use data from the Comprehensive Regional Floridan Aquifer Network established pursuant to the 1998 UEC Water Supply Plan, including public water supply wells. Data from the network will be used to better understand the relationships between water levels, water quality, and water use.

Recommendation 7. Develop a density dependent solute transport groundwater flow model for next UEC Water Supply Plan Update. The District will develop and calibrate a density dependent groundwater flow model for the Floridan Aquifer for predictive analysis purposes. This model will be an "inset model" developed from a larger scale regional Floridan Aquifer model. The District will use this model to support development of the next update of the UEC Water Supply Plan.

Recommendation 8. Implement a Floridan Aquifer exploratory well program to gather additional hydrogeologic data. The District will implement a Floridan Aquifer exploratory well drilling program to gather Floridan Aquifer hydrogeologic information for development of a Floridan Aquifer density dependent groundwater model. This recommendation incorporates three Floridan Aquifer exploratory well sites in the planning area. This includes construction of a multi-zone monitoring well, geophysical logging, and aquifer performance testing at each site.

Recommendation 9. Conduct Floridan Aquifer tracer tests to better understand flow paths in Floridan Aquifer. The District will conduct tracer tests in the Floridan Aquifer at two sites. The tracer tests will show preferential flow paths within the aquifer and allow the District to calculate dispersivity for the density dependent model, as recommended.

Recommendation 10. Refine Floridan well inventory, increase public awareness of the presence of Floridan wells as land is converted from agricultural use to urban use, and support local initiatives to decommission wells that are no longer used. Through renewal of consumptive use permits in the UEC Planning Area, the District will refine its inventory of Floridan Aquifer wells. The Floridan well inventory will be employed to ensure that Floridan wells are appropriately decommissioned as land is converted from agricultural to urban use. Developers will be notified of the presence of Floridan wells on properties through the District's Environmental Resource Permitting process and/or Consumptive Use Permitting Program. The District will support local initiatives to decommission wells that are no longer used.

4. RECLAIMED WATER

Recommendation 11. The District will continue to encourage reclaimed water interconnects between utilities, where appropriate, to maximize the use of reclaimed water. Interconnections between reclaimed water systems could increase the volume of reclaimed water being used by providing an alternative to deep well injection when wastewater flows exceed reclaimed water demand. For facilities that have minimal reuse capabilities, interconnects with a utility that has these capabilities will make beneficial use of reclaimed water.

Recommendation 12. Modify WaterSIP application criteria to encourage efficient use of reclaimed water. The District should modify project scoring criteria for the WaterSIP funding program, encouraging utilities to become more efficient in the use of reclaimed water. This could include installing meters and establishing volume based rates and/or establishing application rates consistent with District allocation criteria.

Recommendation 13. The District will provide technical assistance to local governments in establishing mandatory reuse zones. Mandatory reuse zones are geographic areas designated by local governments through ordinance where the use of reclaimed water is required. Mandatory reuse zones are very effective in increasing reuse, especially in undeveloped areas where installation of reclaimed water distribution systems and use of reclaimed water would be required at the time of development.

5. RESERVOIRS

Regional storage through reservoirs is addressed in the Surface Water recommendations that follow.

6. SEAWATER

As part of the UEC 2004 water supply planning process, it was concluded that seawater is a potential alternative source of water, which needs future consideration; however, not in the 2025 planning horizon. Based on the projected water demands, other water sources are available to meet projected needs that have lower treatment costs.

7. SURFACE WATER

Recommendation 14. Continue implementation of the Northern Palm Beach County Comprehensive Water Management Plan. Approximately 44,800 acre-feet of storage has been purchased in the L-8 Reservoir as part of the Northern Palm Beach County Comprehensive Water Management Plan (Northern Plan). The G-160 Loxahatchee Slough Structure has been constructed and the G-161 Structure is in design and scheduled for completion in 2005. Improvements to storage and water conveyance infrastructure will capture water currently lost to tide in the wet season and provide supplemental supplies in the dry season—meeting environmental needs and projected urban and agricultural demands.

Recommendation 15. Complete the CERP North Palm Beach County Project Part 1 Project Implementation Report and implement the findings. This project will serve as a continuation of the Northern Plan.

Recommendation 16. Develop a restoration plan for the Loxahatchee River. The District, in cooperation with other agencies and stakeholders, will develop a restoration plan for the Loxahatchee River that incorporates environmental water needs, while maintaining existing levels of flood protection and public water supply.

Recommendation 17. Establish initial reservation for Northwest Fork of the Loxahatchee River. The District intends to adopt an initial reservation to keep existing water used for fish and wildlife protection, consistent with the restoration goal and pursuant to the minimum flow and level (MFL) rule for the Northwest Fork of the Loxahatchee River. The District initiated rulemaking for the water reservation in April 2004. This water reservation will be reviewed periodically and revised as conditions change, such as the changes that will occur in the region as CERP projects become operational. This provides flexibility to account for changes in implementation strategies and contingency plans during the life of the project.

Recommendation 18. Review and revise the MFL and associated recovery strategy for the Northwest Fork of the Loxahatchee River by 2005. By 2005, the District should review and revise, as needed, the existing MFL and associated recovery plan for the Northwest Fork of the Loxahatchee River to consider information developed during the establishment of restoration goals and water reservations pursuant to the MFL rule.

Recommendation 19. Establish MFLs for the tributaries to the Northwest Fork of the Loxahatchee River. The NW Fork of the Loxahatchee River tributaries include Cypress Creek, Hobe Grove Ditch, Kitching Creek, and Loxahatchee Slough, which are on the District's MFL Priority Water Body List.

Recommendation 20. Complete construction of the Ten Mile Creek Project Critical Restoration Project. This critical project involves construction of a 550-acre reservoir (maximum depth of 10 feet) and a 110-acre stormwater treatment area (maximum depth of 4 feet).

Recommendation 21. Implement the CERP Indian River Lagoon – South Project. The District should actively pursue federal authorization to implement the CERP Indian River Lagoon (IRL) – South Project Implementation Report (PIR), and construct the project to manage freshwater flows to the St. Lucie River and southern Indian River Lagoon.

Recommendation 22. Conduct study of connecting the SFWMD's C-25 basin with the SJRWMD's C-52 and Upper St. Johns River Basin project. Conduct a cooperative study between the SFWMD and SJRWMD to evaluate the feasibility of connecting the SFWMD's C-25 basin with the SJRWMD's C-52 and Upper St. Johns River Basin project. The study would identify the benefits and estimated costs of such a connection.

8. SURFICIAL AQUIFER SYSTEM

Recommendation 23. Develop tools in order to conduct SAS modeling that can be incorporated into the next update of the UEC Water Supply Plan. The District will develop, improve and update modeling tools in order to conduct SAS modeling as part of the next five-year update of the UEC Water Supply Plan.

9. RELATED STRATEGIES

Recommendation 24. Coordinate the 2004 UEC Water Supply Plan with other efforts. The District should coordinate the 2004 UEC Update recommendations with other regional planning efforts, including development of the Lower East Coast Regional Water Supply Plan, CERP North Palm Beach County Project Part 1, Ten Mile Creek Critical Restoration Project, CERP Indian River Lagoon – South and others.

Recommendation 25. Ensure the timely coordination of local government land use planning and SFWMD regional water supply planning. The District will share vital water supply planning information with local governments as it is developed. This information includes, but is not limited to, the projection of anticipated future demands, identification of existing and future sources of available water, sustainability of water resources and natural systems, and technical assistance on other related issues, such as water conservation and reuse.

Recommendation 26. Continue the Alternative Water Supply Funding Program (District-wide). The District will continue the Alternative Water Supply (AWS) Funding Program to facilitate implementation of cost-effective and appropriate alternative water supplies, such as reuse and development of the Floridan Aquifer.

Summary of Upper East Coast Water Supply Plan Costs and Schedules

Table 4-6. Summary of estimated schedule and SFWMD costs for water resource development recommendations in the Upper East Coast Water Supply Plan.

Recommendation		Plan Implementation Costs ($1,000 and FTEs)											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Aquifer Storage and Recovery													
1	Aquifer Storage and Recovery	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.25
Conservation													
2	Mobile Irrigation Laboratories	See Table 4-1. Funding for District-wide, non-CERP efforts.											
3	Water Conservation Rulemaking	0	0.00	5	0.25	5	0.10	0	0.10	0	0.10	10	0.55
4	Water Savings Incentive Program	See Table 4-1. Funding for District-wide, non-CERP efforts.											
5	Water Conservation Outreach and Education	See Table 4-1. Funding for District-wide, non-CERP efforts.											
Floridan Aquifer													
6	Comprehensive Regional Floridan Aquifer Monitoring Well Network	94	0.40	122	0.40	125	0.40	125	0.40	125	0.40	591	2.00
7	Floridan Aquifer Density-Dependent Flow Model	50	0.30	100	0.30	50	1.00	0	1.00	0	0.00	200	2.60
8	Floridan Aquifer Exploratory Well Program	750	0.40	750	0.40	750	0.40	0	0.20	0	0.00	2,250	1.40
9	Floridan Aquifer Tracer Tests	10	0.20	70	0.20	120	0.20	0	0.10	0	0.00	200	0.70
10	Floridan Aquifer Well Inventory	0	0.10	0	0.05	0	0.05	0	0.05	0	0.05	0	0.30
Reclaimed Water													
11	Reclaimed Water Interconnects	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.25
12	Efficient Reclaimed Water Use	0	0.15	0	0.00	0	0.00	0	0.00	0	0.00	0	0.15
13	Mandatory Reuse Zones	0	0.05	0	0.10	0	0.05	0	0.05	0	0.05	0	0.30
Surface Water													
14	North Palm Beach County Comprehensive Water Management Plan	Incorporated into Recommendation 15.											

Table 4-6. Continued.

Recommendation		Plan Implementation Costs ($1,000 and FTEs)											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
15	CERP North Palm Beach County Project Part 1	See Table 4-3. Nonfederal funding for CERP projects.											
16	Loxahatchee River Restoration Plan	0	4.00	0	0.00	0	0.00	0	0.00	0	0.00	0	4.00
17	Initial Reservations NW Fork of Loxahatchee River	0	1.00	0	0.00	0	0.00	0	0.00	0	0.00	0	1.00
18	NW Fork Loxahatchee River MFL	20	2.00	0	0.00	0	0.00	0	0.00	0	0.00	20	2.00
19	NW Fork Loxahatchee River Tributaries MFLs	0	0.00	20	1.50	40	2.25	0	0.00	0	0.00	60	3.75
20	Ten-Mile Creek	See Table 4-2. Nonfederal funding for critical projects.											
21	CERP Indian River Lagoon–South	See Table 4-3. Nonfederal funding for CERP projects.											
22	C-25 – C52 Basin Connectivity Study	100	0.50	0	0.00	0	0.00	0	0.00	0	0.00	100	0.50
Surficial Aquifer													
23	Surficial Aquifer Modeling	0	0.00	0	0.00	100	1.50	100	1.50	100	1.50	300	4.50
Related Strategies													
24	Coordination with Other Efforts	0	0.20	0	0.20	0	0.20	0	0.20	0	0.20	0	1.00
25	Coordinate Land and Water Planning	0	0.60	0	0.50	0	0.50	0	0.40	0	0.40	0	2.40
26	Alternative Water Supply Program	See discussion in the District-wide Water Conservation Program section.											
	TOTAL	**1,024**	**10.00**	**1,067**	**4.00**	**1,190**	**6.75**	**225**	**4.10**	**225**	**2.80**	**3,731**	**27.65**

Summary of the Quantity of Water to Be Made Available by Implementation of the Upper East Coast Regional Water Supply Plan

Table 4-7. Water made available through implementation of the Upper East Coast Regional Water Supply Plan in FY2005 and by FY2009 (FY2005–2008).

Recommendation		Est. Water Made Available (mgd)	
		In FY2005	By FY2009
	Aquifer Storage and Recovery		
1	Aquifer Storage and Recovery	.00	.00
	Conservation		
2	Mobile Irrigation Laboratories*	8.60	34.40
3	Water Conservation Rulemaking	.00	.00
4	Water Savings Incentive Program*****	.08	.40
5	Water Conservation Outreach and Education*****	.01	.05
	Alternative Water Supply Funding Program **(**see **Related Strategies)***		
	Floridan Aquifer System		
6	Comprehensive Regional Floridan Aquifer Monitoring Well Network	.00	.00
7	Floridan Aquifer Density-Dependent Flow Model	.00	.00
8	Floridan Aquifer Exploratory Well Program	.00	.00
9	Floridan Aquifer Tracer Tests	.00	.00
	Reclaimed Water		
10	Floridan Aquifer Well Inventory	.00	.00
11	Reclaimed Water Interconnects	1.00	6.00
12	Efficient Reclaimed Water Use	.00	.00
13	Mandatory Reuse Zones	.00	.00
	Surface Water		
14	Northern Palm Beach County Comprehensive Water Management Plan	.00	.00
15	CERP North Palm Beach County Project Part 1	.00	.00
16	Loxahatchee River Restoration Plan	.00	.00
17	Initial Reservations NW Fork of Loxahatchee River	.00	.00
18	NW Fork of Loxahatchee River MFL	.00	.00
19	NW Fork of Loxahatchee River Tributaries MFLs	.00	.00
20	Ten Mile Creek	TBD	TBD
21	CERP Indian River Lagoon- South	.00	24.00
22	C-25 C52 Basin Connectivity Study	.00	.00
	Floridan Aquifer System		
23	Surficial Aquifer Modeling	.00	.00
	Related Strategies		
24	Coordination with Other Efforts	.00	.00
25	Coordinate Land and Water Planning	.00	.00
26	Alternative Water Supply Funding Program*	*see below	*see below
	TOTAL	**9.69**	**64.85**

* See discussion in the District-wide Water Conservation Program section and Table 4-1. Funding for District-wide, non-CERP efforts.

2000 LOWER WEST COAST WATER SUPPLY PLAN

PLAN ORGANIZATION

Water resource development options for the Lower West Coast Planning Area are grouped according to water source options that were identified to address key regional issues:

1. Conservation
2. Groundwater resources
3. Reclaimed water
4. Regional irrigation distribution system
5. Seawater
6. Storage
7. Surface water
8. Related implementation strategies

Information Provided

The schedule and costs to implement the recommendations in the Lower West Coast Water Supply Plan (SFWMD, 2000c) over the next five fiscal years are summarized in **Table 4-8**. Estimates are provided (to the extent that can be determined) of the water that will be made available for each recommendation in **Table 4-9**.

Water Resource Development Options and Recommendations

1. CONSERVATION

DESCRIPTION/DISCUSSION

This option requires implementation of water conservation measures that address demand reduction, including practices that achieve long-term permanent reductions in water use rates. The SFWMD has amended its water use permitting rules to incorporate specific mandatory water conservation requirements for each use type in the Basis of Review. Use types include public water supplies, commercial/industrial users, landscape and golf course users, and agricultural users. Another conservation measure is the implementation of the District-wide Water Conservation Program. A more detailed description of this program is provided in the District-wide Water Conservation Program section of this chapter.

Mobile irrigation laboratories provide a cost-effective way to promote more efficient use of water among urban and agricultural water users. The SFWMD recommends maintaining the existing three labs and expanding the program by one lab in the Lower West Coast Planning Area through identification of dedicated funding sources to replace current SFWMD funding.

SUMMARY OF CHANGES/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 1.1. Develop a Conservation Program. In 2003, the SFWMD adopted year-round mandatory water conservation measures for landscape irrigation (Rule 40E-24) for all of Lee, Collier, and portions of Charlotte County within District boundaries. The purpose of the mandatory conservation measure is to help ensure the long-term sustainability of water resources in these counties, which make up a significant portion of the Lower West Coast Planning Area. It is also the objective of these measures to increase water use efficiency and curtail wasteful water use practices. Implementation and enforcement of this program is ongoing; public awareness was expanded in a public information campaign that was completed by the end of Fiscal Year 2004.

Recommendation 1.2. Maintain and Add Mobile Irrigation Laboratories (MILs). Specialized labs on wheels perform landscape and agricultural irrigation system evaluations and recommend ways to make these systems more efficient, saving water and energy, and reducing runoff and the use of chemical fertilizers. There are three labs in the Lower West Coast Planning Area – two urban labs, and one agricultural lab including a lab funded by the Big Cypress Basin. In FY2004, $215,600 was spent to fund labs in the planning area. Mobile irrigation laboratories are a key component in a successful comprehensive conservation program and are discussed in more detail in the District-wide Water Conservation Program section of this chapter.

The urban labs educate property owners/operators in irrigation efficiency, system design needs, and irrigation scheduling. Each urban MIL completes about 140 evaluations per year, with potential water savings of 30 million gallons of water per year and an associated reduction in lawn chemicals and fertilizers leaving the site as runoff. The agricultural labs performed 110 evaluations in FY2004 and saved 249 million gallons of water within the year.

2. GROUNDWATER RESOURCES

DESCRIPTION/DISCUSSION

Three major aquifer systems exist within the Lower West Coast Planning Area. These aquifers are identified as the Surficial Aquifer System (SAS), the Intermediate Aquifer System (IAS), and the Floridan Aquifer System (FAS).

SUMMARY OF CHANGES/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendations 2.1.1 and 2.2.1. Maintain and Expand the SAS and IAS Monitoring Programs. The SFWMD and the United States Geological Survey (USGS) have worked cooperatively to improve the coverage of the real time aquifer water level monitoring network. Improvements to the non-Floridan groundwater monitoring network have taken place over the past few years. Since 2000, real time water level monitoring data network collection platforms were established on 13 water tables and Lower Tamiami monitoring wells in the Big Cypress Basin. These wells provide real time data to the USGS for use with their online, real time groundwater conditions map. In addition, 41 well sites were converted with recorders as follows: 19 recorders were upgraded with transducers that allow digital recording and 22 wells were converted from monthly tape measurements to recorders. In FY 2003, an additional 19 well sites were fitted with USGS recorders: three in Collier County, six in Lee County, and 10 in Hendry County. The initiative for building this system is complete and only maintenance continues.

The Potentiometric mapping project for the Intermediate Aquifer System was completed in 2003. This project defined and delineated the water table, Lower Tamiami, Sandstone and Mid-Hawthorn Aquifers, and provided greater interpretations of the Lower West Coast's regional hydrogeology.

Recommendations 2.1.2 and 2.2.2. Incorporate SAS and IAS Concepts and Criteria into the Consumptive User Permitting Program. The SAS and IAS concepts and criteria used in the Lower West Coast Water Supply Plan should be incorporated into the SFWMD's Consumptive Use Permit (CUP) Program and the District's overall water supply management responsibilities through rulemaking. Examples of such rulemaking may include minimum flows and levels (MFLs), coastal saltwater intrusion prevention, wetland protection, aquifer protection from excessive drawdowns, aquifer monitoring, and protection from contamination. Rulemaking efforts revised several consumptive use permit rules in recent years – the "A List" rules in August 2002 and "B List" rules in September 2003.

Recommendations 2.1.3 and 2.2.3. Develop and Utilize SAS and IAS Models**.** A composite groundwater model for Collier, Lee, and Hendry counties is under construction. A groundwater model to be used in analyses for the 2005 update of the Lower West Coast is being developed. The Southwest Florida Feasibility Study surface water model will provide data and linkage to the groundwater model.

Recommendation 2.3.1. Develop a Model to Evaluate Floridan Aquifer System Use, Aquifer Storage and Recovery, and Water Quality. Data collection has been completed for development of a Floridan aquifer system model for analyses in the 2005 update of the Lower West Coast Water Supply Plan. Calibration of the model is imminent. The model is a comprehensive flow model for the Lower West Coast Floridan Aquifer System and will be capable of simulating movement of salt water towards production wells. The results of this FAS modeling effort will be integrated into the CERP Aquifer Storage and Recovery Study, and further model development would then follow.

Recommendation 2.3.2. Expand the FAS Groundwater Monitoring Network. The water quality and water level monitoring network is being enhanced with installation of real time data loggers that will record water levels on an hourly basis. Ten Floridan Aquifer System wells are equipped with continuous recording devices. Data from these recorders will be utilized to calibrate the Lower West Coast Floridan Aquifer inset model for the 2010 Lower West Coast Water Supply Plan update. Floridan exploratory well construction and testing documents have been finalized for well sites in LaBelle, Immokalee, Collier County I-75 site, Hendry County L-2 canal site, and WS-18 Big Cypress Preserve.

Recommendation 2.3.3. Develop and Recognize FAS Data Partnerships. In FY2004 and FY2005, the SFWMD has funded and is currently in the process of developing a comprehensive flow model for the Floridan Aquifer System. This model will be considered in development of the 2005 update of the Lower West Coast Water Supply Plan.

Recommendation 2.3.4. Continue Government Cooperation to Explore Alternative Desalination Concentration Disposal Options. The SFWMD participated in a workshop with the SJRWMD, the FDEP, and the United States Environmental Protection Agency (USEPA) concerning options for disposal of concentrate from desalination treatment facilities. Potential methods of disposal include deep well injection, surface water discharge, and blending with reclaimed water. The reclassification of concentrate to something other than industrial waste would reduce construction costs associated with deep well injection. For surface water discharges, the FDEP indicated a desire to assist applicants in characterizing water quality in receiving bodies and of the concentrate (based on source quality and treatment method) and applying an up-front screening level process to identify potential concerns, including toxicity. Reclassifying concentrate to something other than industrial waste was discussed during the 2000 legislative session, but no legislative changes have occurred to date related to this issue.

3. RECLAIMED WATER

DESCRIPTION/DISCUSSION

Reclaimed water is water that has flowed out of a domestic wastewater treatment facility, received at least secondary treatment and basic disinfection and is reused for a beneficial purpose. Reuse is the application of reclaimed water in compliance with the FDEP and SFWMD rules for a beneficial purpose. Potential uses of reclaimed water include landscape and agricultural irrigation, groundwater recharge, industrial uses, and environmental enhancement. Reclaimed water has played a significant role in meeting the water supply needs of the Lower West Coast, and this is expected to continue.

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

From 2002 to 2003, the use of reclaimed water increased 2.5 percent in the Lower West Coast Planning Area, with over 63 mgd being used. Of the 42 wastewater facilities in the planning area with a capacity of 0.100 mgd or greater, 40 are reclaiming water. Over 83 percent of the treated wastewater is being reused for irrigation of residential lots, golf courses, and other green spaces.

4. REGIONAL IRRIGATION DISTRIBUTION SYSTEM

DESCRIPTION / DISCUSSION

The construction and operation of a regional irrigation distribution system will enable water to be transferred from areas of surplus to areas of deficit to fulfill urban irrigation needs. This regional system could conserve the fresh groundwater sources while maximizing the use of reclaimed water that would have otherwise been discharged to surface water or deep well injected and lost from the inventory. Storage, primarily through aquifer storage and recovery, will be a key component to bridge the gap between the seasonal and geographic relationships of available supplies and demands. This system would make irrigation water available for local supply entities/utilities to withdraw from, for distribution to meet their individual needs. This system could have many different configurations including one large regional system, several subregional systems or on a utility-by-utility basis.

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 4.1. Conduct and Implement a Regional Irrigation Distribution System Study. A contract was awarded to conduct a feasibility analysis and master plan for the construction and operation of a regional irrigation distribution system in the urban areas of Lee and Collier counties. The Regional Irrigation Distribution System (RIDS) study consists of a distribution system that would make irrigation water available to local supply entities and utilities for distribution to individual users. The Lower West Coast Region has three project sub-regions: (1) Collier County, Naples, and Bonita Springs; (2) City of Cape Coral; and (3) Lee County and the City of Ft. Myers.

The RIDS study concluded, “Benefits and incentives for the RIDS program are very positive in terms of additional water resources in a high growth area, such as the Lower West Coast of Florida. Overall, the RIDS optimizes existing reclaimed water supplies, maximizes seasonally available surface water, diversifies supply sources, potentially reduces water shortage declarations, offsets potable water usage for irrigation purposes, reduces wastewater disposal volumes, and offsets future potential groundwater withdrawals.”

The result of the subregional analysis is the preliminary design for all three subregions that is scheduled for completion in December 2004.

5. SEAWATER

DESCRIPTION/DISCUSSION

This option involves using seawater from the Gulf of Mexico as a raw water source. The Gulf of Mexico appears to be an unlimited source of water from a quantity perspective; however, removal of salts is required prior to potable or irrigation uses. A desalination treatment technology would be needed, such as distillation, reverse osmosis, or electrodialysis reversal.

SUMMARY OF CHANGES/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Other Water Resource Projects – Seawater Desalination. Technological improvements have made seawater desalination more affordable. Co-location with power plants reduces cost by sharing the cost of intake and discharge facilities, providing more desirable sources of water and sufficient cooling water discharges to dilute the reverse osmosis concentrate.

The SFWMD hired a consultant to conduct a feasibility study of co-locating seawater reverse osmosis treatment systems with power plants. The purpose of the study was to provide order of magnitude cost estimates for representative sites within the SFWMD. Phase 1 of this feasibility study was completed in March 2002. The study recommended two "desirable" technically feasible Florida Power & Light (FPL) sites for a more detailed evaluation and cost analysis: Port Everglades in Broward County and Ft. Myers in Lee County. Efforts to identify a co-location project in the Lower West Coast were initiated, but have not continued due to lack of a local sponsor.

6. STORAGE

DESCRIPTION/DISCUSSION

Three types of potential storage options were identified in the Lower West Coast Water Supply Plan. These types are aquifer storage and recovery, regional retention, and reservoirs.

Aquifer Storage and Recovery (ASR) is the underground storage of injected water into an acceptable aquifer (typically the Floridan Aquifer System in southwestern Florida) during times when water is available, and the subsequent recovery of this water during high-demand periods. Current regulations require injected water to meet drinking water standards when the receiving aquifer is classified as a drinking water aquifer, unless an aquifer exemption is obtained from the USEPA. Obtaining an aquifer exemption is a rigorous process and few have been approved. Although the SFWMD will forgo seeking a variance until studies regarding pathogen die-off have been completed, the USEPA has indicated that a flexible assessment approach will be applied for systems that meet all drinking water standards except fecal coliform.

Under the regional and local retention option, opportunities are examined to increase water storage through manipulation and modification of the drainage system while still maintaining an appropriate level of flood protection. Much of the Lower West Coast Planning Area has been drained to support agricultural and urban development. This has resulted in lowered groundwater tables that may impact natural systems as well as water availability in these areas. Members of the Lower West Coast Water Supply Plan Advisory Committee stated that work completed by the Big Cypress Basin has successfully improved their canal system to increase groundwater levels, resulting in less frequent irrigation demands.

The use of reservoirs involves the capture and storage of excess surface water during rainy periods and subsequent release during drier periods for environmental and human uses. Regionally, surface water storage could be used to attenuate freshwater flows to the Caloosahatchee Estuary and other estuarine water bodies during rainy periods, and meet minimum flows during drier periods. In addition, these facilities could increase surface water availability for current and projected uses and decrease the demand on aquifer systems. However, evaporative and seepage losses could significantly affect water availability.

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendations 6.1.1, 7.7, and 8.2. Continue Government Cooperation to Make Rule Changes to the Underground Injection Control Program. The SFWMD will continue working with other government entities including the Legislature, Congress, the USEPA, and the FDEP to explore rule changes to the federal and state Underground Injection Control (UIC) Program to allow for injection of untreated or partially treated groundwater or surface water for aquifer storage and recovery. The Fate of Microorganisms in Aquifers Study is being conducted in cooperation with the SWFWMD to better understand variables that result in pathogen die-off. Results of this study would provide the scientific basis for any change in existing regulations.

Recommendation 6.1.2. Develop Consumptive Use Permit Program Rules to Address the Use of the Floridan Aquifer System for Aquifer Storage and Recovery. Staffing requirements for the CUP, rulemaking, and Resource Protection Projects recommended in all of the regional water supply plans have been incorporated into the Lower East Coast Regional Water Supply Plan, Recommendation 40.

Recommendation 6.2.1. Modify Regional and Local Retention Systems/Operations. The SFWMD has provided funding to two regional retention projects, the Cape Coral/Gator Slough/Reuse System Enhancement Project and the East County Water Control District Aquifer Recharge Project. The Cape Coral/Gator Slough/Reuse System Enhancement Project will provide an additional 19 mgd of water for their reuse system. The East Water Control District Aquifer Recharge Project will raise water levels in a 9,000-acre watershed. Delays in funding have slowed this project. Work accomplished in the Big Cypress Basin (per the five-year work plan) includes the structure replacements for Golden Gate #1 and Faka Union #5 structures (both completed in 2003).

In 2004, construction was completed for the following projects:

- Channel modification and bridge replacement for CR 951 canal improvements
- The CR 951 water control structure and backpumping
- The Corkscrew Canal Weir #1
- The Henderson Creek Weir #2 is under construction and should be complete by the end of 2004.
- The Southern Golden Gate Estates (Picayune Strand) Hydrologic Restoration Project final Project Implementation Report was noticed and submitted to the USACE Division of Engineers in September 2004. The purpose of the project is to restore and enhance the wetlands in Golden Gate Estates and in adjacent public lands by reducing over-drainage. Raising water levels in the Prairie Canal would result in estimated additional groundwater storage of 7,337 acre-feet per year over the 2000 land use base condition.

7. SURFACE WATER

DESCRIPTION DISCUSSION

This option involves the use of surface water as a supply source. Surface water bodies in the Lower West Coast Planning Area include lakes, canals, and rivers. Lake Trafford and Lake Hicpochee are the two largest lakes within the Lower West Coast Planning Area, but neither is considered a good source of water. The Caloosahatchee River Basin and the associated flows from Lake Okeechobee form the largest source of surface water in the Lower West Coast Planning Area. The Caloosahatchee Water Management Plan (SFWMD, 2000a) addressed most of the surface water needs in the Lower West Coast Planning Area.

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 7.1. Develop a Caloosahatchee River Aquifer Storage and Recovery Pilot Project. The SFWMD completed a draft Project Management Plan for the Caloosahatchee River Aquifer Storage and Recovery Pilot Project in September 2001. The purpose of the Project Management Plan was to establish the scope, define a schedule, and determine the costs associated with conducting the project. Aquifer storage and recovery wells are proposed in order to maximize the benefits associated with the Caloosahatchee River Storage Reservoir. A pilot project for these wells was needed to identify the most suitable sites for the aquifer storage and recovery wells near the reservoir, and to determine the optimum configuration of those wells. The pilot project provided information regarding the characteristics of the aquifer system within the Caloosahatchee River Basin as well as determined the hydrogeological and geotechnical characteristics of the upper Floridan Aquifer. The pilot project also determined the specific water quality characteristics of waters to be injected, the specific water quality characteristics and the amount of water recovered from the aquifer, and the water quality characteristics of water within the receiving aquifer. The C-43 Aquifer Storage and Recovery Project is scheduled to begin construction in 2005.

Recommendation 7.2. Implement the C-43 Basin Storage Project. The SFWMD has acquired a site in western Hendry County to construct the C-43 reservoir for 160,000 acre-feet of storage. Construction for this C-43 storage reservoir will begin by early 2006. The purpose of the project is to capture C-43 Basin runoff and releases from Lake Okeechobee. The reservoir will be designed to provide environmental water supply deliveries to the Caloosahatchee Estuary and to reduce salinity and nutrient impacts of runoff to the estuary.

Recommendations 7.3 and 7.8. Complete the Southwest Florida Feasibility Study and evaluate the environmental needs of the Southwest Florida Study. The District and the USACE approved a Project Management Plan for the Southwest Florida Feasibility Study in January 2002. The purpose of the Project Management Plan was to establish the scope, define a schedule, and determine the costs associated with conducting the Southwest Florida Feasibility Study. The feasibility study will identify water resource related problems and opportunities and provide a framework to address the health of aquatic ecosystems, water flows, water quality, water supply, flood protection, wildlife, biological diversity, and natural habitat in southwest Florida.

The following activities occurred in 2004 for the Southwest Florida Feasibility Study:

- Completion of a predevelopment vegetation map
- Development of four subregional Mike-She models

- Completion of a 2000 land use map completed
- Development of a 2050 land use map and demand projections
- Completion of water quality assessment data completed; ecologic-estuarine performance measures and targets identified; and identified hydrologic stages and flows

The next major milestone for this project is the final array of alternatives that are due the fall of 2005.

Recommendations 7.4 and 8.1.2. Establish Minimum Flow and Levels (MFLs) for the Caloosahatchee River and Estuary. This recommendation is to establish MFLs for the Caloosahatchee River and Estuary by December 2000, in accordance with Section 373.042, F.S. The MFLs for the Caloosahatchee River and Estuary and Lower West Coast aquifer system (except for the water table aquifer and the Floridan Aquifer) were adopted by the SFWMD's governing board in March 2001, and became effective in September 2001. This final rule became effective in September 2001, and was incorporated into Chapter 40E-8, F.A.C. This rule included flow criteria for S-79 and salinity criteria near the vegetation bed. A draft status update report titled, Technical Documentation to Support Development of Minimum Flows and Levels for the Caloosahatchee River and Estuary (SFWMD, 2003c) was prepared by the SFWMD in 2003.

Recommendation 7.5. Implement well abandonment programs. The SFWMD closed 3,300 Floridan wells in this region between 1979 and 1991. The SFWMD assists with state or local initiatives; however, presently there is no sponsored program.

Recommendation 7.6. Analyze Saltwater Influence. Saline water has been a recurring problem for the potable water intakes in the Caloosahatchee River. The potable water intakes are located approximately one mile upstream of structure S-79. During extended periods of low flow, the chloride content of the shallow water increases well beyond the recommended limit of 250 milligrams per liter (mg/L) for drinking water. The District will coordinate additional analysis of the saltwater influence problem at the S-79 structure. When saltwater intrudes up the Caloosahatchee River to the potable water intakes, releases of water from Lake Okeechobee are made through structure S-77. This recommendation involves staff support and coordination only. This recommendation also corresponds to the Lower East Coast Regional Water Supply Plan Recommendation 14.

8. RELATED IMPLEMENTATION STRATEGIES

DESCRIPTION/DISCUSSION

This section includes those recommended efforts that could not be associated with a specific source option, or apply to several of the options. In general, these recommendations promote consistency by incorporating the concepts and guidelines used as criteria in the Lower West Coast Water Supply Plan into the District's water management programs through rulemaking or other implementation processes.

SUMMARY OF CHANGE/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 8.1.1. Incorporate Criteria into the Consumptive Use Program. The SFWMD has initiated rulemaking in 26 subject matters to incorporate salient portions of all of the water supply plans into the CUP Program and other components of the SFWMD's overall water supply management responsibilities. White papers and preliminary rule drafts have been

developed for several of the subjects. The governing board adopted the "B List" water use rule revisions, including the Aquifer Storage and Recovery rules in June 2003.

Recommendation 8.2. Cooperate with Other Government Entities to Accomplish Changes in Aquifer Storage and Recovery and Desalination Disposal Regulations. The SFWMD provided technical and legislative support to the FDEP for the sponsorship of Senate Bill 854/House Bill 705 regarding Aquifer Storage and Recovery in the 2001 Florida legislative session. The bill was designed to allow for an exemption to the total coliform drinking water standard for aquifer storage and recovery recharge water provided the applicant can demonstrate die-off of these organisms. The bill did not make it into law. In November 2001, the SFWMD decided to forgo seeking a variance from existing Aquifer Storage and Recovery regulatory criteria and determined that Aquifer Storage and Recovery pilot projects will comply with applicable regulatory criteria. This decision may be revisited once results from studies being conducted by the SFWMD, the SWFWMD, and the SJRWMD regarding pathogen die-off have been completed.

Recommendation 8.3. Wetlands Drawdown Study. The Wetland Drawdown Study has been completed and a rule implementing the findings of the study is in effect. This rule established the criteria for the protection of wetlands from harm caused by consumptive use withdrawals of water. The governing board adopted the Water Use Wetland Protection Rule in June 2003, and this rule became effective in September 2003.

Recommendation 8.4. Public Information. The District makes the groundwater models, data, and other relative information referenced in the Lower West Coast Water Supply Plan available to the public on a continual basis.

SUMMARY OF LOWER WEST COAST WATER SUPPLY PLAN COSTS AND SCHEDULES

Table 4-8. Summary of estimated schedule and SFWMD costs for water resource development recommendations in the Lower West Coast Water Supply Plan.

Water Source Options and Recommendations		Plan Implementation Costs ($1,000s and FTEs) Funding after FY2006 dependent upon Lower West Coast Plan Update in 2006											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total Cost FY2005–FY2009	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Water Source Option 1: Conservation													
1.1	Develop a conservation program	See Table 4-1. Funding for District-wide, non-CERP efforts FY2005–FY2009.											
1.2	Maintain and add MILs												
Water Source Option 2: Groundwater Resources													
2.1.1	Maintain and expand the SAS monitoring program	70	0.25	70	0.25	70	0.25	70	0.25	70	0.25	350	1.25
2.1.2	Incorporate SAS concepts and criteria into the CUP Program	Incorporated into Recommendation 40 of the Lower East Coast Regional Water Supply Plan (Table 4- 10).											
2.1.3	Develop and utilize SAS models	Incorporated into Recommendation 2.2.3											
2.2.1	Maintain and expand the IAS monitoring program	70	0.25	70	0.25	70	0.25	70	0.25	70	0.25	350	1.25
2.2.2	Incorporate IAS concepts and criteria into the CUP Program	Incorporated into Recommendation 40 of the Lower East Coast Regional Water Supply Plan (Table 4-10).											
2.2.3	Develop and utilize IAS models	492	2.00	100	0.50	100	1.00	200	1.00	50	1.00	942	5.50
2.3.1	Develop a model to evaluate FAS use, ASR storage and water quality	45	1.00	0	0.50	100	1.00	150	1.00	50	1.00	345	4.50
		Also Incorporated into the ASR Regional Study listed under CERP (Table 4-3)											
2.3.2	Expand the FAS groundwater monitoring network	85	0.50	50	0.50	50	0.50	50	0.50	50	0.50	285	2.50
2.3.3	Develop and recognize FAS data partnerships	Ongoing with no funds or FTEs committed at this time.											
2.3.4	Continue government cooperation to explore alternative desalination concentration disposal options	Pending FDEP rule changes.											
	Subtotal	**762**	**4.00**	**290**	**2.00**	**390**	**3.0**	**540**	**3.00**	**290**	**3.00**	**2,272**	**15.00**
Water Source Option 3: Reclaimed Water													
See Recommendation 4.1.													
Water Source Option 4: Regional Irrigation Distribution System													
4.1	Conduct and implement a regional irrigation system study	520	0.50	500	0.50	1,000	0.50	1,500	0.50	1,500	0.50	5,020	2.50
	Subtotal	**520**	**0.50**	**500**	**0.50**	**1,000**	**0.50**	**1,500**	**0.50**	**1,500**	**0.50**	**5,020**	**2.50**
Water Source Option 5: Seawater													
See Recommendation 42 of the Lower East Coast Regional Water Supply Plan (Table 4-10).													

Table 4-8. Continued.

Water Source Options and Recommendations		Plan Implementation Costs ($1,000s and FTEs) Funding after FY2006 dependent upon Lower West Coast Plan Update in 2006											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total Cost FY2005–FY2009	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Water Source Option 6: Storage													
6.1.1	Continue government cooperation to make rule changes to the UIC Program	Incorporated into ASR Pilot Projects listed under CERP (Table 4-3).											
6.1.2	Develop CUP Program rules to address the use of the FAS for ASR	Incorporated into Recommendation 40 of the Lower East Coast Regional Water Supply Plan (Table 4-1-0).											
6.2.1	Modify regional and local retention systems/operations	300	0.10	300	0.10	300	0.10	300	0.10	300	0.10	1,500	0.50
	Subtotal	**300**	**0.10**	**300**	**0.10**	**300**	**0.10**	**300**	**0.10**	**300**	**0.10**	**1,500**	**0.50**
Water Source Option 7: Surface Water													
7.1	Develop a Caloosahatchee River ASR pilot project	See Table 4-3. Nonfederal funding for CERP projects.											
7.2	Implement the C-43 Storage Project												
7.3	Complete the Southwest Florida Study	See Table 4-3. Nonfederal funding for CERP projects, reconnaissance, feasibility, planning studies.											
7.4	Establish MFLs for the Caloosahatchee River and Estuary	Complete											
7.5	Implement well abandonment programs	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
7.6	Analyze saltwater influence	Incorporated into Recommendation 2.1.1.											
7.7	Continue government cooperation to make rule changes to the UIC Program	Incorporated into ASR Pilot Projects listed under CERP (Table 4-3).											
7.8	Evaluate the environmental needs of the Southwest Florida Study	See Table 4-3. Nonfederal funding for CERP projects, reconnaissance, feasibility, planning studies.											
Water Source Option 8: Related Implementation Strategies													
8.1.1	Incorporate criteria into the CUP Program	See Recommendation 40 in the Lower East Coast section (Table 4-10).											
8.1.2	Establish MFLs for the Caloosahatchee River and Estuary and the Lower West Coast aquifer systems	Complete											
8.2	Cooperate with other government entities to accomplish changes in ASR and desalination disposal regulations	Incorporated into ASR Pilot Projects listed under CERP (Table 4-3).											
8.3	Wetland Drawdown Study	Complete –- See Table 4-1. Funding for District-wide, non-CERP efforts.											
8.4	Make groundwater models, data and other relative information referenced in the Lower West Coast Water Supply Plan available to the public	Ongoing											
	Subtotal	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**
	TOTAL	**1,582**	**4.60**	**1,090**	**2.60**	**1,690**	**3.60**	**2,340**	**3.60**	**2,090**	**3.60**	**8,792**	**18.0**

Summary of the Quantity of Water to Be Made Available by Implementation of the Lower West Coast Water Supply Plan

Table 4-9. Water made available through implementation of the Lower West Coast Water Supply Plan in FY2005 and by FY2009 (FY2005–2008).

Recommendation		Est. Water Made Available (mgd)	
		In FY2005	By FY2009
1	**Water Conservation Program**		
1.1	Water Conservation Program*	3.50	5.40
1.2	Mobile Irrigation Laboratories*	4.90	19.60
2	**Groundwater Resources**		
2.1.1	SAS Monitoring	0.00	0.00
2.1.2	SAS Rulemaking	0.00	0.00
2.1.3	SAS Modeling	0.00	0.00
2.2.1	IAS Monitoring	0.00	0.00
2.2.2	IAS Rulemaking	0.00	0.00
2.2.3	IAS Modeling	0.00	0.00
2.3.1	FAS Model Development	0.00	0.00
2.3.2	FAS Monitoring	0.00	0.00
2.3.3	FAS Data Partnerships	0.00	0.00
2.3.4	FAS Government Cooperation	0.00	0.00
3	**Reclaimed Water**	63.00	73.00
4	**Regional Irrigation Distribution System**		
4.1	Regional Irrigation Distribution System Study	see 3	see 3
5	**Seawater**	0.00	0.00
6	**Storage**		
6.1.1	ASR Water Quality	0.00	0.00
6.1.2	ASR Rulemaking	0.00	0.00
6.2.1	Regional and Local Retention	0.00	87.70
6.3	Reservoirs	see 7.2	see 7.2
7	**Surface Water**		
7.1	CWMP - Caloosahatchee River ASR Pilot Project	0.00	0.00
7.2	CWMP - C-43 Storage Project	0.00	0.00
7.3	CWMP - Southwest Florida Study	0.00	0.00
7.4	CWMP - Minimum Flows and Levels	0.00	0.00
7.5	CWMP - Well Abandonment Program	0.00	0.00
7.6	CWMP - Saltwater Influence	0.00	0.00
7.7	CWMP - Permitting Issues Associated with ASRs	0.00	0.00
7.8	Southwest Florida Study	0.00	0.00
8.0	**Related Implementation Strategies**		
8.1.1	District-wide Rulemaking	0.00	0.00
8.1.2	Minimum Flows and Levels	0.00	0.00
8.2	Government Cooperation	0.00	0.00
8.3	Wetlands Drawdown Study	0.00	0.00
8.4	Public Information	0.00	0.00
	TOTAL	**71.40**	**185.70**

*See discussion in the District-wide Water Conservation Program section and Table 4-1.

2000 LOWER EAST COAST REGIONAL WATER SUPPLY PLAN

PLAN ORGANIZATION

Water resource development options for the Lower East Coast Planning Area are grouped by the scope and nature of the recommended projects as follows:

1. Ongoing projects from the 1998 Interim Plan for Lower East Coast Regional Water Supply (Lower East Coast Interim Plan) (SFWMD, 1998b)
2. Other federal, state and South Florida Water Management District projects
3. CERP projects
4. Recommendations to CERP resulting from analysis performed during the Lower East Coast regional water supply planning and development process
5. Recommendations to CERP from the Caloosahatchee Water Management Plan
6. Operational recommendations resulting from Lower East Coast water supply planning and development process analysis
7. Consumptive Use Permitting (CUP) Program and Resource Protection Projects
8. Other water resource development projects

Information Provided

The summary of each category of recommendations includes a description, a list of recommendations, funding sources, implementing agencies, costs to nonfederal entities (primarily the SFWMD) and estimates of total District staff time required in FTEs to implement the option. The schedule and costs to implement the recommendations in the 2000 Lower East Coast Regional Water Supply Plan over the next five fiscal years are summarized in **Table 4-10** at the end of this section. In addition, estimates are provided (to the extent that can be determined) of the amount of water that will be made available for each recommendation in **Table 4-11**, also at the end of this section.

The water resource development projects are listed to correspond with the numbered recommendations in the Lower East Coast Regional Water Supply Plan. For each option, a description is provided of changes in the plan scope or implementation that has occurred since the 2004 Five-Year Water Resource Development Work Program (SFWMD, 2004a) was published.

Water Resource Development Options and Recommendations

ONGOING PROJECTS FROM THE LOWER EAST COAST INTERIM PLAN

DEFINITION/DISCUSSION

Significant water supply planning and development projects were initiated with the completion of the Lower East Coast Interim Plan, which was accepted by the governing board in March 1998. A number of these projects involve capital expenditures by the SFWMD or partners and must be continued to completion. The majority of these projects will be concluded prior to

the next update of the Lower East Coast Regional Water Supply Plan, and the five-year projections reflect this fact.

RECOMMENDATIONS

1. Improve regional saltwater intrusion management
2. Refine the Floridan Aquifer System (FAS) Groundwater Model
3. Develop a Northern Palm Beach County comprehensive water management plan
4. Construct and operate the Eastern Hillsboro Regional Aquifer Storage and Recovery (ASR) Pilot Project
5. Construct and operate the Hillsboro (Site 1) Reservoir Pilot Project
6. Establish Lake Worth Lagoon minimum/maximum flow targets
7. Develop and implement a northern Broward secondary canals recharge network
8. Implement a design study for an interconnected water supply system in southeastern Broward County
9. Evaluate urban environmental enhancement in Broward County
10. Construct the Miami-Dade Water and Sewer Department (WASD) Utility Aquifer Storage and Recovery
11. Establish Biscayne Bay minimum and maximum flow targets

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 1. Improve Regional Saltwater Intrusion Management. During FY2004, a draft internal Website to display updated groundwater quality and levels data from a combined USGS and District database was developed. Efforts to refine it have been suspended due to other priorities.

Recommendation 2. Refine the Floridan Aquifer System Groundwater Model. Data loggers were installed on several existing Floridan wells for use in model calibration and verification. This effort is being coordinated with the CERP regional Aquifer Storage and Recovery project. Funds have been budgeted in FY2005 for the development of the Floridan Aquifer System model, which is scheduled for completion in 2009.

Recommendation 3. Develop a Northern Palm Beach County Comprehensive Water Management Plan. Construction of the G-160, Loxahatchee Slough structure was completed in January 2004. The preliminary design of the G-161 culvert under Northlake Boulevard is continuing. Preliminary design for the Control 2 Pump Station to replace the current facility on the M-Canal is scheduled to be completed in January 2005. Widening of the M-Canal by the City of West Palm Beach has been delayed, but is continuing.

Recommendation 4. Construct and Operate the Eastern Hillsboro Regional Aquifer Storage and Recovery Pilot Project. This pilot project is being implemented by the Palm Beach County Water Utilities Department. Construction of the Hillsboro Regional Aquifer Storage and Recovery Pilot Project has been completed. The county is still awaiting approval by the FDEP to begin cycle testing.

Recommendation 5. Construct and Operate the Hillsboro (Site 1) Reservoir Pilot Project. With the acceleration of the schedule for the CERP Site 1 full-scale impoundment, the pilot impoundment project was eliminated.

Recommendation 6. Establish Lake Worth Lagoon Minimum/Maximum Flow Targets. The Lake Worth Lagoon minimum and maximum flow targets final project report was completed in May of 2003, and the final report has been made available for use in the sediment transport component of the North Palm Beach County CERP Project.

Recommendation 7 and 9. Implement the Broward County Water Resource Development Projects. The Broward County Water Resource Development Projects (Recommendations 7 and 9 from the Lower East Coast Plan) consist of the Northern Broward Secondary Canals Recharge Network and the Broward County Urban Environmental Enhancement. Implementation of these recommendations has been contracted to the Broward County Department of Planning and Environmental Protection. The recommendations have been integrated into the Broward County Countywide Integrated Water Resource Plan. Construction drawings were prepared for the necessary secondary canal infrastructure projects, including canal interconnections, pumps, and storage areas. Construction began in FY2004.

Recommendation 8. Develop a Southeast Broward County Interconnected Water Supply System. Broward County and Hollywood agreed to increase the average amount of water the City of Hollywood receives from the county's regional wellfield to an average of 5 mgd.

Recommendation 10. Construct the Miami-Dade Water and Sewer Department (WASD) Utility Aquifer Storage and Recovery. Twenty-five mgd of aquifer storage and recovery capacity has been constructed, but only 15 mgd of that capacity is allowed for operation. The Miami-Dade WASD is drilling an additional monitoring well and working with the FDEP to obtain an operational permit. The Miami-Dade WASD continues to determine the location of an additional 10 mgd near the Northwest Wellfield.

Recommendation 11. Establish Biscayne Bay Minimum and Maximum Flow Targets. A literature review of seagrass habitat requirements was completed. Comparative scenarios and sensitivity runs have been completed and analyzed using the South Florida Water Management Model and TABS-MDS for the south-central region of the bay. Results have been summarized. Reports of beneficial flows and MFL criteria will continue to be refined as necessary. A peer review of the MFL criteria and basis is planned for Fiscal Year 2005. Public workshops to discuss the technical criteria through the Water Resources Advisory Commission (WRAC) process were initiated in FY2004, and will continue in FY2005.

OTHER FEDERAL, STATE OR SOUTH FLORIDA WATER MANAGEMENT DISTRICT PROJECTS

DEFINITION/DISCUSSION

Two groups of projects have been included in this category. The first group (Recommendation 12) includes those Critical Projects in the Lower East Coast Planning Area that the SFWMD sponsors locally. The Critical Project Program was authorized by the U.S. Congress under the Water Resource Development Act of 1996 to expeditiously implement restoration projects that are deemed critical to the restoration of the South Florida ecosystem. The second group (Recommendations 13 through 16) is SFWMD-initiated projects that reflect recommendations developed in the Caloosahatchee Water Management Plan and a

recommendation regarding mobile irrigation laboratories that support similar recommendations in other District water supply plans.

RECOMMENDATIONS

12. Implement Critical Projects
13. Implement well abandonment programs
14. Investigate saltwater influence at S-79 (Caloosahatchee Basin)
15. Cooperate with other government entities to resolve permitting issues associated with Aquifer Storage and Recovery systems and reclaimed water and reuse
16. Maintain and add MILs

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 12. Implement Critical Projects. The West Canal Structure on C-4 has been completed. The S-9A pump station has been completed and construction of the S-381 spillway has begun. Construction of the Lake Okeechobee Water Retention/Phosphorus Removal Project has begun. **Table 4-10** summarizes the nonfederal costs of the Critical Projects over the next five fiscal years.

Recommendation 14. Investigate Saltwater Influence at S-79 (Caloosahatchee Basin). Releases of water from Lake Okeechobee have been made to control lake level, so saltwater intrusion has not been an issue.

Recommendation 15. Cooperate with Other Government Entities to Resolve Permitting Issues Associated with Aquifer Storage and Recovery and Reclaimed Water and Reuse. The Fate of Microorganisms in Aquifers Study is being conducted in cooperation with the SWFWMD to better understand variables that result in pathogen die-off. Results of this study would provide the scientific basis for any change in existing regulations.

Recommendation 16. Maintain and Add Mobile Irrigation Laboratories (MILs). Mobile irrigation laboratories have been incorporated into the Comprehensive Water Conservation Program that is discussed in the District-wide Water Conservation Program section. **Table 4-1** summarizes funding for District-wide non-CERP efforts.

COMPREHENSIVE EVERGLADES RESTORATION PLAN (CERP) PROJECTS

DEFINITION / DISCUSSION

The keys to Everglades restoration as determined in the Central and Southern Florida Project Comprehensive Review Study (Restudy) are to increase the amount of water available, ensure adequate water quality, and reconnect the parts of the system that have interrupted historical drainage patterns. One component of this effort is to annually regain for beneficial use about two million acre-feet of excess water that is currently being discharged to tide for flood control. The recommendations made within the Restudy (i.e., structural and operational modifications) are being further refined and will be implemented in CERP. Analyses completed as part of the Lower East Coast Regional Water Supply Plan confirmed that the Restudy projects scheduled for completion by 2020 are extremely beneficial for meeting MFLs and natural system restoration targets. Benefits include reducing high water flows to estuaries and providing water to meet urban

and agricultural demands throughout the Lower East Coast Planning Area. Many of the proposed projects have significant water resource benefits that need to be considered in this plan.

CERP is a recommendation of the Lower East Coast Regional Water Supply Plan's program of water resource development projects. Completion of CERP projects that affect the Lower East Coast and Caloosahatchee Planning Areas by 2020, and timely implementation according to the schedule in the Restudy are crucial to meeting the objectives of the Lower East Coast Regional Water Supply Plan. The plan identified 63 CERP projects in the Lower East Coast Planning Area. Details of these projects along with estimates of funding requirements can be found in the Lower East Coast Regional Water Supply Plan, the Caloosahatchee Water Management Plan, and the Central and Southern Florida Project Comprehensive Review Study (Restudy). Any changes to plan scheduling will be consistent with the five-year update of the Lower East Coast Regional Water Supply Plan.

Although the primary purpose of CERP is to provide environmental restoration for the Everglades, an ancillary benefit is that more water will also be available to meet urban and agricultural needs. Combining associated CERP projects with the Lower East Coast Plan was designed to provide sufficient water to meet projected environmental, urban, and agricultural water needs in the Lower East Coast Planning Area for the next 20 years.

RECOMMENDATIONS

17. Implement CERP projects that affect the Lower East Coast Planning Area and the Caloosahatchee Basin

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 17. Implement CERP Projects that Affect the Lower East Coast Planning Area and the Caloosahatchee Basin. A listing of individual CERP components in the various SFWMD planning areas and their costs is provided in **Table 4-3**. See **Table 4-11** for the quantity of water potentially available in FY2005 and by FY2009. Implementation information on CERP projects is available in the CERP Master Implementation Schedule, Update 1.0 revision 13 (SFWMD, 2001). Monthly progress reports for each CERP project are available from http://www.evergladesplan.org.

RECOMMENDATIONS TO CERP FROM THE LOWER EAST COAST REGIONAL WATER SUPPLY PLAN

DEFINITION / DISCUSSION

The Lower East Coast Regional Water Supply Plan analyses indicated that refinement of some of the CERP projects might improve their performance. The Lower East Coast Regional Water Supply Plan recommends that these modifications be analyzed and incorporated into the planning and design of CERP projects during the project implementation reporting process, into the restoration coordination and verification (RECOVER) process, and into any operational changes for these features.

RECOMMENDATIONS

18. Determine optimum C-51 backpumping method without affecting the location of S-155A

19. Restore or improve hydropatterns within Water Conservation Area (WCA) 2B
20. Conduct Everglades Agricultural Area (EAA) Storage Reservoirs design study
21. Develop L-8 Basin Project operating schedule
22. Optimize operation of the C-51 Regional Groundwater Project's Aquifer Storage and Recovery
23. Complete the West Miami-Dade Reuse Feasibility Study
24. Implement and update the water supply and environmental (WSE) regulation schedule for Lake Okeechobee
25. Identify and protect Lake Belt Storage Area Project seepage barrier
26. Develop and implement Everglades rain-driven operations
27. Change coastal wellfield operations

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendations 18, 21, and 22. Determine Optimum C-51 Backpumping Method. Develop L-8 Basin Project Operating Schedule. Optimize Operation of the C-51 Regional Groundwater Project's Aquifer Storage and Recovery. These analyses will be conducted during the North Palm Beach County CERP Project Part 2 that is scheduled to begin in 2009. During 2004, efforts continued to be directed toward preparing the Project Management Plan for Part 1, the non-ASR components.

Recommendation 19. Restore or Improve Hydropatterns within WCA-2B. The RECOVER team has not yet made any recommendations that can be implemented in the Lower East Coast planning process.

Recommendation 20. Conduct Everglades Agricultural Area (EAA) Storage Reservoirs Design Study. The EAA Storage Reservoir CERP Project Management Plan has been approved and the Project Implementation Report (PIR) is currently under way. Analysis will be done during the PIR.

Recommendation 23. Complete the West Miami-Dade Reuse Feasibility Study. The CERP Reuse Feasibility Study was suspended in 2004 to expedite completion of other CERP projects.

Recommendation 24. Implement and Update the Water Supply and Environmental (WSE) Regulation Schedule for Lake Okeechobee. The SFWMD and the USACE continue to use the WSE schedule adopted in July 2000 to operate Lake Okeechobee. A temporary deviation was authorized in 2004 to allow discharges that are more beneficial.

Recommendation 25. Identify and Protect Lake Belt Storage Area Project Seepage Barrier. The CERP Lake Belt Pilot Project was suspended in 2004 to expedite completion of other CERP projects.

Recommendation 26. Develop and Implement Everglades Rain-Driven Operations. During FY2003, the contractor continued to develop rainfall-driven operations for WCA-3 and Everglades National Park (ENP) based upon the statement of work that had been developed and approved by the SFWMD and ENP staff.

Recommendation 27. Change Coastal Wellfield Operations. The identified utilities are evaluated for alternate wellfield locations and operation schedules as part of the CUP process. This occurs on a continual basis. The Lower East Coast Plan recommended that some cities in Palm Beach County shift future demand westward. To date, Boca Raton, Lantana, and Riviera Beach have accomplished the shift westward.

RECOMMENDATIONS TO CERP FROM THE CALOOSAHATCHEE WATER MANAGEMENT PLAN

DEFINITION/DISCUSSION

The modeling conducted as part of the Caloosahatchee Water Management Plan and incorporated into the Lower East Coast Regional Water Supply Plan used revised Caloosahatchee Basin hydrology and demands from those used in the Restudy. This assessment showed higher demands and lower runoff from the basin and consequently less water was available to be backpumped into Lake Okeechobee for storage. The Caloosahatchee Water Management Plan identified the need for additional storage within the basin using a regional optimization approach. It was determined that underground storage (aquifer storage and recovery systems) must be able to tolerate extended withdrawals of 220 mgd, and that at least 220,000 acre-feet of aboveground storage (reservoirs plus other storage options) were needed.

RECOMMENDATIONS

28. Develop a Caloosahatchee River Aquifer Storage and Recovery pilot project
29. Implement the C-43 Storage Project
30. Complete the Southwest Florida Study

SUMMARY OF CHANGES/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

The summaries for these three recommendations are discussed in the Surface Water (Water Source Option 7) subsection in the Lower West Coast section of this chapter.

OPERATIONAL RECOMMENDATIONS

DEFINITION/DISCUSSION

Changes in the operation of the Central and Southern Florida (C&SF) Project are needed to accommodate the future construction of proposed major water resource development features. Revised systemwide operational protocols will also be required to assure that projected water supply plan performance targets are met and expected benefits are achieved. A process to periodically review and recommend potential short-term deviations to the systemwide operational protocols is needed. This process must consider variations in weather and hydrologic conditions and identify opportunities for short-term operational deviations that will offset, to some extent, possible impacts of such events. Some measure of operational flexibility is needed that incorporates public input and the SFWMD's governing board approval prior to implementation. Changes must be consistent with the requirement of existing and legal reservations contained in the Water Resource Development Act (WRDA) of 2000.

RECOMMENDATIONS

31. Develop systemwide operational protocols and a periodic operational deviation process
32. Develop periodic operational flexibility
33. Develop a Lake Okeechobee vegetation management plan

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 31 and 32. Operational Protocols and Flexibility. In 2002, the SFWMD governing board accepted the Adaptive Protocols for Lake Okeechobee Operations in cooperation with the USACE and the FDEP, and these protocols have been used since that time. Adaptive protocols for other areas may be limited due to concerns about the "savings clause" contained in the WRDA of 2000.

Recommendation 33. Develop a Lake Okeechobee Vegetation Management Plan. A Melaleuca and Brazilian Pepper Control Program was conducted by ground and aerial application techniques to effectively contain and progressively reduce exotic plant populations within Lake Okeechobee's littoral zone. The program consisted primarily of a ground-based herbicide application with some aerial application within the western littoral area. Ground crews completed Melaleuca, Brazilian pepper, and Australian pine treatment along the eastern side of Lake Okeechobee from the Port Mayaca lock to the City of Belle Glade.

In addition, the USACE continues to manage the traditional aquatic weed treatment program in Lake Okeechobee, spending approximately $600,000 to $800,000 annually. The USACE maintains an Interagency Lake Okeechobee Vegetation Management Plan that defines agreed-upon methods for vegetation management on the lake.

CONSUMPTIVE USE PERMITTING AND RESOURCE PROTECTION PROJECTS

DEFINITION / DISCUSSION

Implementation of the Lower East Coast Regional Water Supply Plan through Consumptive Use Permitting (CUP) and Resource Protection actions will take place consistent with Florida law. Implementation will utilize the water users' assurances framework developed by the Governor's Commission for a Sustainable South Florida included in CERP and further defined through WRDA 2000. Rulemaking to implement the regulatory recommendations of the plan will constitute a significant effort during the next several years. Rulemaking will include water reservations and numerous consumptive use permit criteria, some of which are interrelated and cumulatively define the availability of water for consumptive uses and water resource protection. It was recommended in the 2000 Lower East Coast Regional Water Supply Plan that certain rulemaking efforts be grouped in phases to allow for cumulative analysis of their water resource and consumptive use implications.

Another goal of the rulemaking schedule is to adopt rules as the technical information becomes available. Initial rulemaking has proceeded for concepts that have been sufficiently identified and evaluated such as establishment of MFLs for the Everglades, Lake Okeechobee, the Biscayne Aquifer, and the Caloosahatchee River. These were established in September 2000.

RECOMMENDATIONS

34. Implement water reservations
35. Establish MFLs for Biscayne Bay, Florida Bay, St. Lucie Estuary, and the southern coastal Biscayne Aquifer
36. Develop and implement MFL criteria for the Rockland Marl Marsh
37. Establish MFLs for Florida Bay
38. Develop and implement MFL recovery strategies

39. Establish MFL Monitoring Systems

40. Implement Consumptive Use Permit, rulemaking, and Resource Protection Projects

SUMMARY OF CHANGES/IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 34. Implement Water Reservations. The planning process for developing water reservations for CERP projects is being developed in partnership between the USACE, the SFWMD, other agencies, and the public. Concepts and methodologies presented in the April 25, 2003 final draft white paper titled Water Resource Protection Strategies for the Implementation of CERP Under Federal and State Law were accepted by the governing board at the June 2003 Workshop. These concepts are being used in development of the CERP Guidance Memoranda involving quantification of water made available by CERP and water reserved for the natural system. During 2004, the governing board authorized rule development for the initial (pre-CERP) reservation of water for the Northwest Fork of the Loxahatchee River.

Recommendations 35 through 39. Establish MFLs for Priority Water Bodies and Monitor for Compliance. Recommendations 35 through 39 require the establishment of MFL criteria, development and implementation of recovery strategies and the establishment of a system for monitoring MFLs. MFLs have been adopted for the Everglades, Lake Okeechobee, and the Biscayne Aquifer, the Caloosahatchee River and Estuary, and the St. Lucie River and Estuary. The SFWMD governing board adopted MFLs for the Northwest Fork of the Loxahatchee River in February 2003. Public workshops were conducted in 2004 to support the development of MFL technical criteria for south-central Biscayne Bay. Each MFL technical document includes a MFL recovery plan that provides a description of the programs, projects, and schedules that will meet the MFL.

Recommendation 40. Implement Consumptive Use Permit, Rulemaking, and Resource Protection Projects. The SFWMD initiated rulemaking efforts consistent with the regional water supply plans. The initially proposed rules, which became known as the "A List" rules, became effective in August 2002. The "B List" CUP rules were adopted in June 2003, and became effective in September 2003. The rules address numerous issues, including permit duration, supplemental irrigation requirements, pollution remediation, interference with existing legal uses, existing offsite land use impacts, pasture irrigation, reuse of reclaimed water, wellfield operational plans, diversion and impoundment permits, permit renewal process, impact evaluations, local sources first, aquifer storage and recovery, wetland protection, areas with maximum developable limits, fees, and other review criteria and limiting conditions.

OTHER WATER RESOURCE PROJECTS

DEFINITION/DISCUSSION

The final group of water resource development projects recommended in the Lower East Coast Regional Water Supply Plan is included in Other Water Resource Projects. This category contains five recommendations that did not fit into the other seven groups. One recommendation is to develop a District-wide Comprehensive Water Conservation Program, which was also recommended in the other regional water supply plans. The remaining recommendations are for evaluation and feasibility projects identified during the Lower East Coast Regional Water Supply and integrated water management planning and development processes. These feasibility projects are to be completed and used in the formulation of the next update of the plan, to be completed by 2005.

RECOMMENDATIONS

41. Develop a comprehensive water conservation program
42. Conduct a seawater reverse osmosis treatment facilities feasibility study
43. Conduct a feasibility study for a reclaimed water system in northern Palm Beach County
44. Conduct an indirect aquifer recharge feasibility study
45. Conduct an evaluation of high volume surface water Aquifer Storage and Recovery testing in Taylor Creek

SUMMARY OF CHANGES / IMPLEMENTATION FROM THE PREVIOUS WORK PROGRAM

Recommendation 41. Develop a Comprehensive Water Conservation Program. The Water Conservation Section, created in FY2002 in the District's Water Supply Department, coordinates and manages several water supply and demand management programs including Mobile Irrigation Laboratories, Water Reuse, the Alternative Water Supply Funding Program, Water Saving Incentive Funding Program and Outreach and Education. The District-wide Comprehensive Water Conservation Program is using guidance from the Florida Water Conservation Initiative (FDEP, 2002) to implement water conservation programs throughout the SFWMD. This is discussed more extensively in the District-wide Water Conservation Program section of this chapter and in the Alternative Water Supply Funding Program chapter (Chapter 5).

Recommendation 42. Conduct a Seawater Reverse Osmosis Treatment Facilities Feasibility Study. The SFWMD hired a consultant to conduct a feasibility study of co-locating seawater reverse osmosis treatment systems with power plants. The purpose of the study was to provide order of magnitude cost estimates for representative sites within the District. Phase 1 of this feasibility study was completed in March 2002. The study recommended two "desirable" technically feasible Florida Power & Light sites for a more detailed evaluation and cost analysis: Port Everglades in Broward County and Ft. Myers in Lee County. Efforts to identify a co-location project in the Lower West Coast were initiated, but have not continued, due to lack of a local sponsor.

Recommendation 43. Conduct a Feasibility Study for a Reclaimed Water System in Northern Palm Beach County. The study was completed in December 2002 and concluded that a regional system to provide reclaimed water to users in northern Palm Beach and southern Martin counties was not cost-effective. Rather than a regional reclaimed water system, the study recommended that the existing utilities be responsible for developing a reclaimed water system within their service areas.

Recommendation 44. Conduct an Indirect Aquifer Recharge Feasibility Study. District staff met with the Secretary of the FDEP and others, and agreed to form a partnership to explore the Indirect Aquifer Recharge concept. Several meetings have been held between staff from the SFWMD and the FDEP to work on an agreeable process and approach; however, agreement has not yet been reached. The FDEP and the SFWMD will continue working together to determine a process and approach to further explore Indirect Aquifer Recharge.

Recommendation 45. Conduct an Evaluation of High Volume Surface Water Aquifer Storage and Recovery Testing in Taylor Creek. The testing of high volume surface water ASR in Taylor Creek is currently not feasible. The concept has been incorporated into the CERP Aquifer Storage and Recovery pilot projects for further evaluation.

Other Funds Budgeted for Water Resource Development Contracts. In addition to funds directly associated with recommendations from the Lower East Coast Regional Water Supply Plan that are identified in **Table 4-10**, the SFWMD is budgeting $267,000 for Water Resource Development contracts in FY2005. These contracts are for work that will enhance the groundwater modeling capabilities for the region.

Summary of Lower East Coast Regional Water Supply Plan Costs and Schedules

Table 4-10. Summary of estimated schedule and SFWMD costs for water resource development recommendations in the Lower East Coast Regional Water Supply Plan.

Water Source Options and Recommendations		Plan Implementation Costs ($1,000s and FTEs) Funding after FY2005 dependent upon Lower East Coast Plan Update in 2005											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total Cost FY2005–2009	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Ongoing Projects from the Lower East Coast Interim Plan													
1	Improve regional saltwater intrusion management	184	0.30	163	0.30	163	0.30	164	0.30	164	0.30	838	1.50
2	Refine the FAS Groundwater Model	50	0.40	149	0.40	150	0.40	150	0.40	0	0.40	499	2.00
3	Develop a northern Palm Beach County comprehensive water management plan	See Table 4-3. Nonfederal funding for CERP projects.											
4	Construct and operate the Eastern Hillsboro Regional ASR Pilot Project	SFWMD funding completed.											
5	Construct and operate the Hillsboro (Site 1) Reservoir Pilot Project	See Table 4-3. Nonfederal funding for CERP projects.											
6	Establish Lake Worth Lagoon minimum/maximum flow targets	Complete.											
7-9	Implement the Broward County water resource development projects	0	0.20	0	0.20	0	0.20	0	0.20	0	0.20	0	1.00
10	Construct the Miami-Dade WASD Utility ASR	0	0.00	1,500	0.00	1,500	0.00	1,500	0.00	1,500	0.00	6,000	0.00
11	Establish Biscayne Bay minimum and maximum flow targets	See Recommendations 34 through 40.											
	Subtotal	**234**	**0.90**	**1,812**	**0.90**	**1,813**	**0.90**	**1,814**	**0.90**	**1,664**	**0.90**	**7,337**	**4.50**
Other Federal, State or SFWMD Projects													
12	Implement Critical Projects	See Table 4-2. Nonfederal funding for critical projects.											
13	Implement well abandonment programs	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
14	Investigate saltwater influence at S-79	See Summary of Lower West Coast Water Supply Plan costs and schedules (Table 4-5).											
15	Explore permitting issues associated with ASR systems and reclaimed water and reuse	0	0.00	0	0	0	0	0	0	0	0	0	0
16	Maintain and add MILs	See Table 4-1. Funding for District-wide non-CERP efforts.											
	Subtotal	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**

Table 4-10. Continued.

	Water Source Options and Recommendations	Plan Implementation Costs ($1,000s and FTEs) Funding after FY2005 dependent upon Lower East Coast Plan Update in 2005											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total Cost FY2005–2009	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Comprehensive Everglades Restoration Plan Projects													
17	Implement CERP projects that affect the Lower East Coast Planning Area and the Caloosahatchee Basin	See Table 4-3. Nonfederal funding for CERP projects.											
Recommendations to CERP from the Lower East Coast Regional Water Supply Plan													
18	Determine optimum C-51 backpumping method	No additional costs beyond those listed under CERP (Table 4-3).											
19	Restore or improve hydropatterns within WCA-2B												
20	Conduct EAA Storage Reservoirs design study												
21	Develop L-8 Basin Project operating schedule												
22	C-51 Regional Groundwater Project's ASR												
23	Complete West Miami-Dade Reuse Feasibility Study												
24	Implement and update the WSE regulation schedule for Lake Okeechobee												
25	Identify and protect Belt Storage Area Project seepage barrier												
26	Develop and implement Everglades rain-driven operations	150	1.00	150	1.00	150	1.00	150	1.00	150	1.00	750	5.00
27	Change coastal wellfield operations	No additional costs beyond permitting staffing.											
Recommendations to CERP from the Caloosahatchee Water Management Plan													
28	Develop a Caloosahatchee River ASR pilot project	See Table 4-3. Nonfederal funding for CERP projects.											
29	Implement the C-43 Storage Project												
30	Complete the Southwest Florida Study												
Operational Recommendations													
31	Develop systemwide operational protocols and a periodic operational deviation process	0	1.00	0	1.00	0	1.00	0	1.00	0	1.00	0	5.00
32	Develop periodic operational flexibility	0	1.00	0	1.00	0	1.00	0	1.00	0	1.00	0	5.00
33	Develop a Lake Okeechobee vegetation management plan	150	0.20	150	0.20	150	0.20	150	0.20	150	0.20	750	1.00
	Subtotal	**300**	**3.20**	**300**	**3.20**	**300**	**3.20**	**300**	**3.20**	**300**	**3.20**	**1,500**	**16.00**

Table 4-10. Continued.

Water Source Options and Recommendations		Plan Implementation Costs ($1,000s and FTEs) Funding after FY2005 dependent upon Lower East Coast Plan Update in 2005											
		FY2005		FY2006		FY2007		FY2008		FY2009		Total Cost FY2005–2009	
		$	FTE	$	FTE	$	FTE	$	FTE	$	FTE	$	FTE
Consumptive Use Permitting and Resource Protection Projects													
34	Implement water reservations	0	4.00	0	4.00	0	4.00	0	4.00	0	4.00	0	20.00
35-39	Establish MFLs for priority water bodies and monitor for compliance	198	6.48	198	4.00	198	4.00	198	4.00	198	4.00	990	22.48
40	Implement CUP, rulemaking and Resource Protection Projects	0	5.00	0	5.00	0	5.00	0	5.00	0	5.00	0	25.00
Subtotal		**198**	**15.48**	**198**	**13.00**	**198**	**13.00**	**198**	**13.00**	**198**	**13.00**	**990**	**67.48**
Other Water Resource Projects													
41	Develop a comprehensive water conservation program	See Table 4-1. Funding for District-wide non-CERP efforts.											
42	Conduct a seawater reverse osmosis treatment facilities feasibility study	0	0.10	100	0.40	100	0.40	100	0.40	100	0.40	400	1.70
43	Conduct a reclaimed water system in northern Palm Beach County	Completed.											
44	Conduct an indirect aquifer recharge feasibility study	0	0.50	0	0.50	0	0.50	0	0.50	0	0.50	0	2.50
45	Conduct an evaluation of high volume surface water ASR testing in Taylor Creek	Incorporated into the ASR pilot projects for further evaluation listed under CERP (Table 4-3).											
Subtotal		**0**	**0.60**	**100**	**0.90**	**100**	**0.90**	**100**	**0.90**	**100**	**0.90**	**400**	**4.20**
TOTAL		**732**	**20.18**	**2,410**	**18.00**	**2,411**	**18.00**	**2,412**	**18.00**	**2,262**	**18.00**	**10,227**	**92.18**

Summary of the Quantity of Water to Be Made Available by Implementation of the Lower East Coast Regional Water Supply Plan

Table 4-11. Water made available through implementation of the Lower East Coast Regional Water Supply Plan in FY2005 and by FY2009 (FY2005–2008).

Recommendation		Est. Water Made Available (mgd)	
		In FY2005	By FY2009
	Ongoing Projects from the Lower East Coast Interim Plan		
1	Regional Saltwater Intrusion Management	0.00	0.00
2	FAS Groundwater Model	0.00	0.00
3	Northern Palm Beach County Comprehensive Water Management Plan	0.00	0.00
4	Eastern Hillsboro Regional ASR Pilot Project	0.00	5.00
5	Hillsboro (Site 1) Impoundment Pilot Project	0.00	0.00
6	Lake Worth Lagoon Minimum/Maximum Flow Targets	0.00	0.00
7	Northern Broward County Secondary Canals Recharge Network	0.00	0.00
8	Southeast Broward County Interconnected Water Supply System	0.00	0.00
9	Broward County Urban Environmental Enhancement	0.00	0.00
10	Miami-Dade Water and Sewer Department Utility ASR Project	15.00	35.00
11	Biscayne Bay Minimum/Maximum Flow Targets	0.00	0.00
	Other Federal, State or SFWMD Projects		
12	Critical Projects	0.00	61.00
13	Well Abandonment Program (from CWMP)	0.00	0.00
14	Saltwater Influence at S-79 (from CWMP)	0.00	0.00
15	Permitting Issues Associated with ASR Systems and Reuse of Reclaimed Water	0.00	0.00
16	Mobile Irrigation Laboratories*	1.30	5.20
17	**CERP Projects**		
	Recommendations to CERP from the Lower East Coast Plan and CWMP		
18	S-155A	0.00	0.00
19	Everglades Hydropatterns within WCA-3-B	0.00	0.00
20	Everglades Agricultural Area Storage Reservoirs	0.00	0.00
21	L-8 Project	0.00	0.00
22	C-51 Regional Groundwater Projects ASR Facilities	0.00	0.00
23	West Miami-Dade Reuse Feasibility	0.00	0.00
24	Lake Okeechobee Regulation Schedule	0.00	0.00
25	Lake Belt Storage Area Projects	0.00	0.00
26	Everglades Rain-Driven Operations	0.00	0.00
27	Change Coastal Wellfield Operations	0.00	0.00
28	Caloosahatchee River ASR Pilot Project	0.00	0.00
29	C-43 Basin Storage Reservoir and ASR Project	0.00	0.00
30	Southwest Florida Study	0.00	0.00
	Operational Projects		
31	Systemwide Operational Protocols	0.00	0.00
32	Periodic Operational Flexibility	0.00	0.00
33	Lake Okeechobee Vegetation Management Plan	0.00	0.00

Table 4-11. Continued.

	Recommendation	Est. Water Made Available (mgd)	
		In FY2005	By FY2009
	Consumptive Use Permitting and Resource Protection Projects		
34	Water Reservations	0.00	0.00
35	Establish MFLs	0.00	0.00
36	MFL Criteria for Rockland Marl Marsh	0.00	0.00
37	MFLs for Florida Bay	0.00	0.00
38	MFL Recovery Strategies	0.00	0.00
39	MFL Monitoring Systems	0.00	0.00
40	Consumptive Use Permitting, Rulemaking and Resource Protection Projects	0.00	0.00
	Other Projects		
41	Comprehensive Water Conservation Program*	7.60	55.10
42	Seawater Reverse Osmosis Treatment Facilities	0.00	0.00
43	Reclaimed Water System in Northern Palm Beach County	0.00	0.00
44	Indirect Aquifer Recharge	0.00	0.00
45	High Volume Surface Water ASR Testing in Taylor Creek	0.00	0.00
46	Alternative Water Supply Funding Program*	see below	see below
	TOTAL	**23.90**	**161.30**

*See discussion in the District-wide Water Conservation section and Table 4-1. Funding for District-wide non-CERP efforts FY2005–FY2009.

REGIONAL WATER SUPPLY PLAN COSTS

Table 4-12 summarizes each of the regional water supply plan estimated costs for FY2005 through FY2009 and provides a total estimated cost for all the water supply planning areas for FY2005 through 2009.

Table 4-12. Regional non-FTEs water supply plan costs FY2005–FY2009.

Region	Plan Implementation Costs ($1,000s)					
	FY2005	FY2006	FY2007	FY2008	FY2009	Total Cost FY2005–FY2009
Kissimmee Basin	305	0	0	0	0	305
Upper East Coast	1,024	1,067	1,190	225	225	3,731
Lower West Coast	1,582	1,090	1,690	2,340	2,090	8,792
Lower East Coast	732	2,410	2,411	2,412	2,262	10,227
TOTAL*	**3,643**	**4,567**	**5,291**	**4,977**	**4,577**	**23,055**

*Inclusive of regional water supply plans and other projects resulting from the plans.

FUNDING NEEDS

From FY2005 through FY2009, it is estimated that the implementation of the regional water supply plans (including District-wide projects) and CERP will cost the South Florida Water Management District $1,210.5 million. The projected cost is distributed as follows:

- Non-federally funded CERP Projects including Critical Projects – $1,148.1 million
- District-wide non-CERP projects – $39.3 million with 33.00 FTEs
- Kissimmee Basin Water Supply Plan – $0.3 million with 12.20 FTEs
- Upper East Coast Water Supply Plan – $3.7 million with 27.65 FTEs*
- Lower West Coast Water Supply Plan – $ 8.8 million and 18.00 FTEs
- Lower East Coast Regional Water Supply Plan – $10.2 million with 92.18 FTEs

For the current fiscal year, FY2005, the total SFWMD budget for water resource development projects and CERP is $295.6 million. The cost is distributed as follows:

- Non-federally funded CERP projects, including Critical Projects – $285.0 million
- District-wide non-CERP projects – $7.0 million and 5.00 FTEs
- Kissimmee Basin Water Supply Plan – $0.3 million with 8.20 FTEs
- Upper East Coast Water Supply Plan – $1.0 million 10.00 FTEs
- Lower West Coast Water Supply Plan – $ 1.6 million with 4.60 FTEs
- Lower East Coast Regional Water Supply Plan – $ 0.7 million with 20.18 FTEs

The costs do not include District staff costs except in CERP and critical projects.

While the SFWMD will move forward with implementing the plans, timing could change based on available funding for FY2006 through FY2009, and the specific projects could be refined based on preliminary feasibility studies or pilot projects. Costs of implementation for FY2005 correspond with the proposed budget and may be different from estimates in the actual plans.

***The Upper East Coast will be implementing a new water supply plan starting in FY2005. New water supply plans will be implemented for the Kissimmee Basin, Lower East Coast, and Lower West Coast starting in FY2006.**

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